Newsletter of the North American Mycological Association

THE MYCOPHILE

Volume 58:1 January-February 2018 www.namyco.org

BLENDED BURGER PROJECT™
FROM THE JAMES BEARD FOUNDATION

The Blend Makes Burgers Better

Here's why chefs are choosing to join this movement of blending finely chopped, umami-rich mushrooms [25% suggested] with ground meat in burgers and propelling the global food revolution forward:

Food Movement

"Sustainability and health are two very important things to me as a chef. Adding mushrooms to the ground meat will add freshness, make my guests rethink about vegetables in a different way, and think about how we can make recipes healthier." – Raenel Stelly, Rae's Cuisine

Sustainability

"It's James Beard! I mean, how could I not join the fun. But seriously being a premier junior chef comes with a lot of responsibility. I want to be on the forefront of sustainable, healthy, nutritious food. I live in an urban city and I see food deserts and hunger. Being able to produce a delicious burger that both delights dinners and helps turn this iconic dish into something we can all still enjoy for generations to come is very important to me." – Logan Guleff, Junior Chef

Flavor

"Mushrooms are such a versatile ingredient and can go a long way in terms of adding flavor and texture. I'm excited to show our guests just how delicious blended burgers can be!" – Troy Guard, Tag Burger Bar

BLEND MUSHROOMS + MEAT
BLENDED BURGER PROJECT™
TO MAKE BURGERS BETTER

Nutrition

"Truthfully, this project lined up with our philosophy. We are always looking for ways to provide healthier options without sacrificing taste or experience. Sourcing sustainable products is also a must for us. The more we can educate our local community, the better. The question really was, 'why not do this?'" – Eric Damidot, Vitascope Hall

Good for Business

"Shortly after the debut of our blended burger, we had lines of people eager to try it —some patrons coming in almost every single day. In the end, our little 30 seat (48 if you count outside) restaurant made over 2,000 burgers in the two months! Selling 600 blended burgers during our burger bash week alone, all while still offering our regular menu." – Toni Elkhouri, Cedar's Café

Upcoming Forays & Other Events

The events page of *The Mycophile* publicizes forays and events of NAMA affiliated clubs which may be of interest to our members. If you would like to list your club's next big event, contact
Susan Kayser, Editor: mycophile@namyco.org.
Include date, location, brief description, link for information, and host organization name.

All California Club Foray 2018
Friday-Sunday, January 19-21, Albion, CA

Join the Bay Area Mycological Society ifor our 8th biannual ACCF, near Mendocino, CA. Open to NAMA members! Our Foray Mycologist is Michael Beug, author of *Ascomycete Fungi of North America*. Cost is $200 per person and includes two nights lodging and all meals from Friday evening through Sunday breakfast. For more information and registration: http://bayareamushrooms.org/forays/accf_2018.html

42nd Annual Sam Ristich NEMF Foray
26-29 July, 2018, at State University of NY at Geneseo.
http://www.nemf.org/index.html

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Stay connected with your friends at NAMA! Renew your membership today!

We know you enjoy being a part of the international mushroom community. We hope you'll take this opportunity to renew your NAMA membership. In 2018, you'll continue to enjoy all the benefits NAMA has to offer, including our newsletter, *The Mycophile*, full of educational articles, book reviews, and news about upcoming forays such as our annual foray near Salem, Oregon and a new regional foray near the historic Natchez Trace Parkway in Mississippi.

We hold an annual photography contest, provide an annual scholarship, host the poison case registry, the original Registry of Mushrooms in Works of Art, and a members-only email discussion group.

Visit http://www.namyco.org/join.php and select the "renew membership" button at the top of the page. Members of affiliated clubs receive a $5 discount. For only $25 ($30 for non-affiliated members), you will receive 6 issues of *The Mycophile*, learn about the NA Mycoflora Project, and stay connected to this wonderful world of fungi. If you have a question about your membership, please contact Steve Bichler at membership@namyco.org.

President's Report, 2017

by David Rust

In the coming year, NAMA will have a new promotional video and a new membership brochure for clubs to use to explain who we are and what we do and to encourage folks in the community of mycophiles to join and work with us in a meaningful way. NAMA's committees on Medicinal Mushrooms, chaired by Dianna Smith, and Education, chaired by Charlotte Caplan, will create and publish new programs to benefit our members. The North American Mycoflora Project, led by Stephen Russell and Bill Sheehan, is set to launch a well-constructed, well-documented collaboration of professional mycologists and NAMA affiliated clubs. I urge you to visit Mycoflora.org and look for or sign up for a project in your area.

Pay a visit to our terrific website, https://www.namyco.org/, and find more that we have to offer, from a list of NAMA contacts to the Registry of Mushrooms in Works of Art. If you manage speakers for your club, check out the terrific presenters listed in the NAMA Speakers Bureau!

Membership Dues Renewal 2018

We know you enjoy being a part of the international mushroom community. We hope you'll take this opportunity to renew your NAMA membership. In 2018, you'll continue to enjoy all the benefits NAMA has to offer, including our newsletter, *The Mycophile*, which is full of educational articles and news about upcoming forays such as our annual foray near Salem, Oregon and a new regional foray near the historic Natchez Trace Parkway in Mississippi.

Every year, NAMA provides a scholarship to a promising PhD student, runs an annual photography contest, and holds the Wildacres Regional Foray in North Carolina. We have documented fungi for 21 years and incorporated them into the Field Museum of Chicago's herbarium—and we now sequence many of those fungi as well.

Please renew your NAMA membership today. Visit http://www.namyco.org/join.php and select the "renew membership" button at the top of the page. Members of affiliated clubs receive a $5 discount. For only $25 ($30 for non-affiliated members), you will receive 6 issues of *The Mycophile* and have full access to our expanded website.

A Request to Members with Spouses

When we send out *The Mycophile* electronically, every email on record receives the issue. We've noticed that of the hundreds of households with two (or more) members, we only have about 45 spouse/household email addresses. We don't like the way the Vieth system treats "the other member" in our database, or collects that info on PayPal, but you can fix it! Please, ask your spouse to log in and add their email address, and make updates to their record online. If you have forgotten your Member Log In or need your Password reset, contact Steve Bichler at membership@namyco.org.

Five things you can do to participate

1. Get involved with your local club and talk to other members about NAMA.
2. Find a NAMA committee that matches your interest, join it, and help it grow! Contact the committee chair directly, using this link and ask to be part of the committee.

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President's Report, 2017, cont.

Continued from p. 3

3. Encourage your club to put on a mushroom fair for the public in the height of your mushroom season. This is a great opportunity to educate folks interested in fungi and grow membership in your club.
4. Write an article for *The Mycophile* on your personal experience as a mushroomer.
5. Attend an annual foray (2018 in Salem, Oregon) or a regional foray (look for news on our event planned for Mississippi and our 21st Wildacres Regional Foray in North Carolina).

The Business of NAMA

I'd like to thank Adele Mehta who served as second vice president for the past six years. I know "second vice president" sounds like a no work position, but Adele has been a trooper putting together nominations every other year (the first vice president organizes nominations in years when the second vp position needs to be filled). Adele has been helpful on many occasions when I needed advice and consultation. As we begin the new year, Connie Durnan joins the executive committee as second vice president. Connie was our registrar for the Northwoods foray and has been extremely helpful sorting out the finances for that event.

Speaking of which, you may have seen some "stuff" on Facebook about finances for the Northwoods foray. Yes, everybody got paid. Yes, we lost money on the foray, for a couple reasons. I want you to know that the executive committee takes our fiduciary responsibility seriously and, while we almost always break even or make a small profit on the annual forays, a loss occasionally happens. If you heard stories and want a more detailed explanation, please contact me at president@namyco.org or simply call me at 510.468.5014. I'm happy to set the record straight.

Decriminalising Magic Mushrooms in CA

by Olivia Solon, The Guardian

As California prepares for the legalisation of recreational marijuana in 2018, one man is pushing for the state to become the first to decriminalise magic mushrooms. Kevin Saunders, a mayoral candidate for the city of Marina, just south of the San Francisco Bay, has filed a proposal that would exempt adults over the age of 21 from any penalties over possessing, growing, selling or transporting psychedelic psilocybin mushrooms. If he can get 365,880 voter signatures by the end of April 2018, the California Psilocybin Legalization Initiative will be placed on the statewide ballot. Saunders thinks that now is the right time because, he says, the drug can help bridge the current political divide and restore a sense of community. <snip>

A profound magic mushroom experience helped Saunders get over a "debilitating five-year heroin addiction" in 2003, when he was 32. "I got to the root of why I made a conscious decision to become a heroin addict; I've been clean almost 15 years."

California is one of eight states where voters have legalised marijuana for recreational use, even though it's still

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A Call for Nominations
by Walt Sturgeon

Gary Lincoff Award for Contributions to Amateur Mycology

NAMA's Award for Contributions to Amateur Mycology is given annually to recognize a person who has contributed extraordinarily to the advancement of amateur mycology. Its recipients have often extensively conducted workshops, led forays, written or lectured widely about mushrooms and identifying mushrooms, all on a national or international level. In 2015, the name of the award was officially changed to recognize the contributions of Gary Lincoff.

Nominations for this award should include a description of the accomplishments the nominee has made in the field of amateur mycology.

A name alone is not a sufficient nomination; neither is a profile on a website. The recipient must be living at the time of the award. Nominees who were not selected to receive the award are automatically re-nominated for 4 additional years, after which the nominee's name has to be re-submitted, and it's up to the nominator to keep track of this.

Selection among nominees is made by the voting of past award winners, and the award includes a plaque and lifetime membership in NAMA.

Nominations are accepted until April 1st of the award year.

Send a single copy of a Nomination by mail or email to:

Walt Sturgeon

Chair, NAMA Awards Committee
288 E North Avenue
East Palestine, OH 44413-2369
Email: mycowalt (at) comcast.net

The Harry and Elsie Knighton Service Award

The Harry and Elsie Knighton Service Award was established by the NAMA Board of Trustees to recognize and encourage persons who have distinguished themselves in service to their local clubs. It is named for the Knightons, whose efforts began the North American Mycological Association in 1967.

The annual award consists of a plaque; publicity for the winner and club in *The Mycophile*; a one-year membership in the organization; and registration, housing and foray fees for the next NAMA Foray.

Each year's recipient is selected by the three most recent recipients of the Award. Every NAMA-affiliated mycological club may nominate one candidate whom it feels has performed meritorious service during the current or preceding year, which has to be described!

Unselected nominees are automatically re-nominated for two additional years.

Nominations are accepted until April 1st of the award year.

Send a single copy of a Nomination by mail or email to:

Walt Sturgeon

Chair, NAMA Awards Committee
288 E North Avenue
East Palestine, OH 44413-2369
Email: mycowalt (at) comcast.net

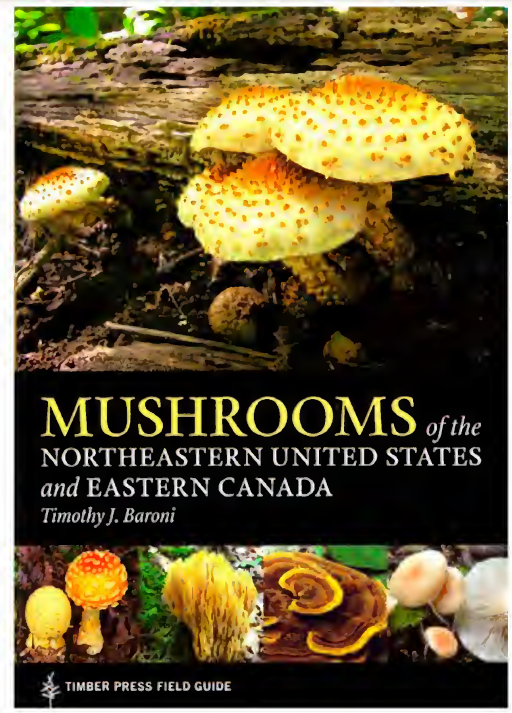
Mushrooms of the Northeastern United States and Eastern Canada

Book Review by Steve Trudell

Mushrooms of the Northeastern United States and Eastern Canada
Timber Press Field Guide $27.95
Timothy J. Baroni
Timber Press (http://www.timberpress.com/)
ISBN-13: 978-1-60469-634-9 (Flexibind; 600 pp, 562 color photos)

In 2006, Timber Press initiated a series of field guides for the Pacific Northwest with the publication of *Wildflowers of the Pacific Northwest*. *Mushrooms of the Northeastern United States and Eastern Canada* is the tenth book in the series and, as the title indicates, the Press has expanded its range beyond the Pacific Northwest, with this being the third volume from another region of North America. Two of the previous guides dealt with mushrooms—*Mushrooms of the Pacific Northwest* and *Mushrooms of the Rocky Mountain Region: Colorado, New Mexico, Utah, Wyoming*. The former covers 465 species in 352 pages and reviewers noted that the too-small size of the photos reduces their effectiveness for identification purposes. The latter features much larger photos than the earlier volume, but covers only about 200 species in 298 pages. In this third mushroom guide, Timber Press has found a winning combination—offering a high species count with detailed-enough descriptions and nice large photos, while keeping the thickness in line with being a "field" guide and the list price at $27.95.

Tim Baroni is Distinguished Professor of Biology in the State University at New York. He teaches at SUNY–College at Cortland and works on the systematics of macrofungi. He has a particular fondness for the angular-pink-spored mushrooms of the Entolomataceae



(*Entoloma, Nolanea, Leptonia, et al.*) and has conducted much field research in the Caribbean and Latin America.

The content and organization of the book are typical for a field guide. The front matter is rather short, consisting of a single 17-page Introduction, addressing the Geographical Scope of the book (defined as the region encompassed by Connecticut, Delaware, Illinois, Indiana, Maine, Massachusetts, [no Michigan?], Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Wisconsin, New Brunswick, Newfoundland, Ontario, and most of Québec [no Nova Scotia and PEI?], a brief overview of the Toxins in Fungi, basics of the Biology of Fungi, What

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Book Review, by Steve Trudell, cont.

Continued from p. 6

To Call It, review of the basic Mushroom Structures, and finishing with advice on Collecting and Identifying Fleshy Fungi. Given the title of the book, one might assume that all of the species described in it are "mushrooms." However, the introduction states that "botanically" (not "mycologically"?) a mushroom is a fleshy fungus fruit body that has gills, while allowing that sometimes boletes also are considered mushrooms. Although I agree with the suggestion that the user learn the names of the various groups of fleshy macrofungi (the usual morphologic groups such as polypores, corals, puffballs, and jelly fungi), I see no harm in considering them all to be mushrooms. Later references to "true mushrooms" further complicate things.

The back sections include a brief how-to on Basic Microscopy, Glossary, Further Reading, Mycological Resources (lists of websites and organizations), Photo and Illustration Credits, and Index to both scientific and common names.

The main part of the book occupies nearly 550 pages, on which are described and illustrated approximately 540 species. Each entry includes a large bold-face heading with the species name and authority (with the authors' names spelled out for those of us who don't recognize all of the author abbreviations). This is followed by the common name(s) for those that have them, a list of principal synonyms, and a capsule description. The more detailed description includes macroscopic features such as cap, gills, stem, ring, flesh, spore print, odor, and taste, plus habit and habitat, range, and microscopic features, the latter usually labeled as "Spores." Technical jargon is kept to a minimum. The treatments conclude with comments that address key features (often repeating them from the capsule description), similar species, misapplied names, and edibility. Most of the ranges are given as "widespread," which is not very helpful without an indication of the area being referred to—the northeast, as defined for this book? North America? The world?—and the specific sort(s) of habitat in which the species occurs. Each description includes a photo, most of which occupy the full width (or nearly so) of the page. They range from borderline adequate (such as singletons and pictorial shots that fail to show key diagnostic features) to excellent in quality, and the generous size greatly enhances their utility for identification. An example is on p.8.

As has been done in the earlier Timber Press mushroom field guides, the identification process involves selecting the appropriate morphological group for the specimen, turning to the section of the book where that group is presented, using the keys to narrow the possibilities, and then carefully comparing the mushrooms in hand with the photos and text descriptions. Icons for the different groups appear in the front endpapers, accompanied by page references for each of them. Finding the section for the group you're after is further facilitated by the use of different colored bars across the tops of the pages. The endpaper icons are the same ones used in the Rocky Mountain guide and so there are a few minor differences between their categories and the ones Baroni uses in the text. However this shouldn't be much of a bother if it is noticed at all. The group sections each open with a short general introduction, followed by a polychotomous key intended to reduce the universe of photos that need to be examined in search of a match. These keys employ a few key features, such as substrate or gill attachment, to divide the included genera

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Book Review, by Steve Trudell, cont.

Continued from p. 7

into subgroups. A short list of key features is then presented for each genus. There are no comprehensive genus descriptions.

Seeing as how this is not the first mushroom book for northeastern North America, it's a fair question whether someone who already owns books such as *Mushrooms of Northeastern North America* (Bessette et al.), *Mushrooms of Northeast North America* (Barron), and *Mushrooms of the Northeast* (Marrone and Sturgeon) should add this one to his/her collection. By my count, together, these four volumes describe (in some detail) and illustrate 1070 species. The Bessette, Barron, and Baroni books cover 631, 554, and 542 species, respectively. In each of these books, about one-third of those species are in only that one of the four books (215, 162, and 168 "unique" species, respectively). The Marrone guide covers far fewer species (177 described and illustrated, with additional species briefly mentioned and/or pictured) and only 11 of them are unique to this book. Thus, even someone who owns all three of the earlier books would benefit from the additional coverage offered by Baroni's new guide. In addition, its nomenclature is, with a few exceptions, up-to-date, and it offers the best combination of sufficiently comp-rehensive descriptions and large, clear, close-at-hand photos of the four, in an attractive package, at a reasonable price. Buying it should be an easy decision for mushroomers on the eastern side of the continent, both those with bulging bookshelves and those who are just getting started building their library of mushroom books.

GILLED MUSHROOMS WITH BROWN SPORE PRINTS 283

Simocybe centunculus **(Fries) P. Karsten**

SYNONYMS *Agaricus centunculus* Fries, *Naucoria centunculus* (Fries) P. Kummer, *Ramicola centunculus* (Fries) Watling

Small olive-brown, densely woolly caps with translucent-lined margins; gills brown with olive tint, attached; stem colored as cap or with more olive hues, densely pubescent at first; on well-decayed hardwood trees

CAP 0.5–2 cm wide, convex, becoming plane, some with low broad central bump, dark grayish-brown with olive tints, but soon paler bronze or yellowish-brown, hygrophanous from center outward and even paler yellowish-tan, translucent-lined over margin at first, minutely woolly (tomentulose) overall (use a lens). **FLESH** brown, thin. **GILLS** pale yellowish-brown with olive tint, attached, close, broad, edges white, frayed. **STEM** 0.5–3 cm long, 1–2 mm broad, equal, same color as cap or with darker olive tints, white mycelioid at base, minutely white fibrillose overall at first, becoming glabrous over the base. **SPORE PRINT** brown. **ODOR** not distinctive, or pungent (geranium odor for me). **TASTE** bitterish but with floral hints.

Habit and habitat clustered on well-decayed, crumbling wood of hardwood stumps or downed logs. August to November. **RANGE** widespread.

Spores broadly ellipsoid or slightly bean-shaped, smooth, pale tan in KOH, 6–8 × 4–5 µm.

Comments One of the LBMs that can be identified using solely field characters with some degree of confidence. The habitat and colors of the fruit bodies are distinctive. Compare with *Flammulaster erinaceellus* that is found in similar habitats.

Sample page from book

Meet Our New McIlvanea Editor

My father, who foraged while hunting, knew one mushroom: 'pinkies' as he called them. So he was highly skeptical and cautionary when I told him that I had joined the New York Mycological Society. But that was several years ago, and here I am, still on the silent hunt. What is the attraction? A lot has to do with the group's ethos: careful but not timid, adventurous but not reckless and knowledgeable without pretension. This compels me to renew my memberships—NAMA included—each year, and now, to step forward and offer my services as editor of McIlvainea.

I am a research chemist who has published in several peer-reviewed journals, and therefore I am well-acquainted with the rigors of peer-review. My forte is process. 'How does it work?' or in the context of mushrooms, "How digestible is it?" motivates me more than "What is it called?" Alas, Linnean names will never drip off my lips. Therefore, I am better suited here to the role of editor rather than contributor. With the guidance of former McIlvainea editor, Dr. Michael Beug, I feel ready to leap to the other side of the manuscript. So let us begin…

Laura Juszczak is Assistant Professor in chemistry at Brooklyn College, the City University of New York. One of her duties is to teach chemistry to nonmajors wherein she emphasizes sustainability, including mycology whenever possible.

Decriminalizing Magic Mushrooms, cont.

Continued from p. 4

included in the federal government's list of schedule I drugs. Saunders and Kitty Merchant, who is co-author of the measure and his fiancee, believe that magic mushrooms–also listed as schedule I drugs–are the next logical step.

"I think we have learned a lot from marijuana and we are ready as a society," he said. …

Merchant and Saunders are not the first couple to propose legalising mushrooms. The husband and wife team Tom and Sheri Eckert announced earlier this year that they were pushing for a similar ballot measure in Oregon, hoping to make it the first state in the US to legalise the drug.

They have taken a more conservative approach than Saunders has, aiming for a 2020 ballot and seeking to legalise the drug to be taken only in licensed centres under the supervision of a certified facilitator. Individuals would not be able to just buy the mushrooms and consume them at home as they can with marijuana. …

https://www.theguardian.com/us-news/2017/nov/25/magic-mushrooms-decriminalization-california

New Regional Foray in Canton, MS

by Sam Landes

Join us this Summer at the first Regional NAMA Foray in Mississippi. We will be staying at The Gray Center in Canton , Mississippi, just north of Jackson. Come explore a part of the country that can be overlooked sometimes.

The Foray will be held Thursday, June 28 through Sunday, July 1, 2018.

We will drive to a couple of wooded sites nearby on Friday morning then put our focus on foraging in the over 750 acres right outside our doors at the Center. They have an extensive network of trails with a varied terrain.

Registration will open in early February and is limited to 60 NAMA members. The rooms are all air conditioned and are accessible. There are two twin beds in each room with a private bath. You can choose to stay in the main lodge or opt to share a cottage. Each cottage has 8 bedrooms containing 2 twin beds and a private bathroom. The cottages have a shared meetings space, a full kitchen and a patio overlooking the lake.

We will have a presentation each night and a social afterwards. The Head Mycologist will be Dr. Juan Luis Mata of the University of South Alabama.

The Gray Center

Photos from NAMA Foray, Cable WI

by David Rust

Chicken of the Woods

Garrett Taylor and Roz Lowen discuss an asco identification

Presenter Nik Money and friends at a Saturday social

North American Mycological Association
Barbara Ching
2019 Ashmore Dr
Ames, IA 50014-7208

Change Service Requested

Newsletter of the North American Mycological Association
THE MYCOPHILE

Mushroom of the Issue

Roridomyces austrororidus Debbie Viess

Roridomyces austrororidus

This curious, teeny tiny, former mycena species is mostly notable for its abundant slime coat. It occurs across the North American continent, mostly in temperate regions. Versions of this species can be found as far away as Australia and New Zealand, where it is called *Roridomyces austrororidus*. No DNA sequence currently exists for *R. austrororidus*, to show just how related these two highly similar but broadly separated species might be. Also noteworthy is the fact that *R. roridus* is bioluminescent. Unlike with our more familiar and far larger *Omphalotus* species, only the mycelia of *R. roridus* shows that spectral glow.

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THE MYCOPHILE

Volume 58:2 March-April 2018 www.namyco.org

Paul Stamets and Dusty Yao Donate to Mycoflora

by David Rust

Photo by Louie Schwartzberg

"We are honored to be able to give this modest contribution to help advance the study of mycology through the Mycoflora initiative.... Live long and sporulate !"

We were thrilled to learn of a $10,000 donation by Paul Stamets and Dusty Yao to NAMA to support the North American Mycoflora Project. This contribution builds on the $24,000 matching fund set up by the Mycological Society of America and recent contributions to the matching fund by affiliated clubs and NAMA.

Everyone accepts that the North American Mycoflora Project has been stalled since its inception in 2012 due to lack of funding. Substantive gifts like this not only give the work a short-term boost, but also establish a track record when applying for future fundraising. Dr. Tom Bruns at UC Berkeley has estimated that to complete a project of this size, $14-16 million will be needed.

The Stamets-Yao gift will be designated for sequencing, offered by the lab of Dr. Todd Osmundson at the University of Wisconsin-La Crosse, and the lab of Dr. Rytas Vilgalys at Duke University in North Carolina. Sequencing is just the beginning, of course, with a next step of uploading data to a public website like GenBank to make this research available.

Fungi Perfecti founder and president Paul Stamets has been a dedicated mycologist for over 40 years. Over this time, he has discovered and coauthored several new species of mushrooms, and pioneered countless techniques in the field of mushroom cultivation. In 2013, Paul received the highly acclaimed NAMA Gary Lincoff Award for Contributions to Amateur Mycology. In 2014, Paul was chosen to be an "Invention Ambassador" by the American Association for the Advancement of Science (AAAS), the largest and most prestigious scientific organization in the world. In 2015 he was the first-ever recipient of the Mycological Society of America's Gordon and Tina Wasson Award.

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Upcoming Forays & Other Events

The events page of *The Mycophile* publicizes forays and events of NAMA affiliated clubs which may be of interest to our members. If you would like to list your club's next big event, contact Susan Kayser, Editor: mycophile@namyco.org.
Include date, location, brief description, link for information, and host organization name.

NAMA Regional Foray
28 June-1 July, 2018 in Mississippi

42nd Annual Sam Ristich NEMF Foray
26-29 July, 2018 at State University of NY at Genesco
http://www.nemf.org/index.html

18th Annual Gary Lincoff Foray
15 September 2018 | North Park (Pittsburgh, PA)
The Western Pennsylvania Mushroom Club hosts the 18th Annual Gary Lincoff Foray on Saturday, 15 September. Guest Speakers will be Gary Lincoff and Taylor Lockwood. For more information, visit: http://wpamushroomclub.org/lincoff-foray/

Wildacres Regional Foray
27-30 September 2018 near Little Switzerland, NC, just off the Blue Ridge Parkway
http://www.wildacres.org/workshops/septemberevents.html#name

NAMA 2018 Annual Foray
11-14 October, 2018 at Salem Oregon.
The chief mycologist is Dr. Joseph W. Spatafora, Professor in the Department of Botany and Plant Pathology at Oregon State University in Corvallis, Oregon. See p. 15 for more information.

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PRESIDENT'S NOTES
by David Rust

I am deeply grateful to NAMA Life Members Paul Stamets and Dusty Yao for a significant contribution to the North American Mycoflora Project. This gift will provide funding for our affiliated clubs' Mycoflora projects to get DNA sequencing at a very low rate. The Mycoflora Project is one of NAMA's top scientific priorities. If your club has started a local project which is listed on the Mycoflora.org website, please write up your activities and submit them to NAMA for our new Mycoflora section.

This is the time of year when we ask you to renew your membership. We want you to be a part of, and contribute to, the larger mycological community in North America. Your enthusiasm and ideas will help our organization thrive. Dues are only $25 for members of affiliated clubs, and $30 for regular members. There are so many ways to contribute and learn at NAMA. Open up your world and renew your membership today. https://www.namyco.org/join.php

It's also the time of year when we ask you to start thinking about attending an annual or regional foray. This year we've got events planned for Mississippi, and our not to be missed Wildacres Retreat Foray. If you haven't been to Wildacres, think about making the trip to this special immersion of learning at one of the most beautiful locations on the East Coast. Our annual foray will be held in Salem, Oregon with forays into the lush forests of the Cascades. Sam Landes, Foray Committee Chair, has devoted a remarkable effort to organizing these forays. Registration for these events will be coming up soon.

I'd like to thank some other members who have put unprecedented time and effort into making NAMA successful. Charlotte Caplan is working on new material for the Education Committee. You can now see all 25 of NAMA's Michael Beug's excellent educational programs on the NAMA website: https://www.namyco.org/educational_programs.php

Dianna Smith, Chair of the Committee on Medicinal Fungi, has written a comprehensive essay on the medicinal potential and qualities of mushrooms, which is in draft form. We hope to publish the final version soon.

James Strzelinski and Kathy Yerich are putting the final touches on a NAMA promotional video, which we'll soon circulate to clubs—a perfect way to introduce NAMA to your members. You'll see leading field mycologists talk about their experience at our annual foray in Wisconsin, and touch on all the wonderful things NAMA does to promote science.

If you are a new member and are not part of our discussion group, you should know that something's going on there which is preventing admins from adding members. We may have to switch to a different platform soon. Did you know NAMA has a Facebook page? Join the conversation there: https://www.facebook.com/groups/214397418588682/

Later this year, NAMA leadership will be conducting a planning session on our future. If you'd like to contribute ideas, please let me know: president@namyco.org.

Finally, on a personal note, despite a crappy mushroom season here on the West Coast—yes, this turned out to be another drought year—the Bay Area Mycological Society put on a lovely science-oriented foray near Mendocino with participants from all over. Hugh Smith (BAMS and NAMA member) took photos of participants: http://bit.ly/2o44kB0. Michael Beug served as our chief mycologist. If your club has successful events you'd like to promote, please consider writing an article for *The Mycophile*! Be sure to list club events on the NAMA events page.

Mushrooms Are Good For You, But Are They Medicine?

by April Fulton, NPR Food [Bay Area Bites | KQED Food]

Mushrooms have been used in Eastern medicine for centuries to treat everything from asthma to gout. Now they're being marketed in the West as functional or medicinal mushrooms that can prevent cancer or stimulate higher brain function, but there are relatively few trials in humans to back up these claims.

There are more than 2,000 species of mushrooms on the planet, but many of us probably only know a few kinds. Sauteing or grilling up white button mushrooms and portobellos may sound familiar to Americans, but in other parts of the world, particularly Asia, soups and stews might contain shiitake, maitake, oyster or lion's mane.

To find a really good variety of mushrooms, I went to my local Mitsura, a Japanese market chain, located at a busy intersection on the west side of Los Angeles. It's pretty drab outside, but when you walk in the doors, there's lots of color and sound: Japanese snacks in bright packages, an aisle of nothing but singing rice cookers, and a rainbow array of mochi ice cream, the Japanese answer to an ice cream sandwich.

Vendors hawk steaming bowls of ramen and freshly fried tempura on one side of the building. And on the other side, there's the produce aisle, which includes rows and rows of mushrooms.

Manager Yumi Kuwata buys the mushrooms here and says her top sellers include shimeji (beech mushrooms,) enoki (tiny white mushrooms with small caps) and shiitake, but she always has at least 10 varieties. Kuwata says her customers buy mushrooms because they're healthy and low in calories. "Japanese food [is] very healthy cuisine. So that's what they are expecting," she says.

But mushrooms offer a lot more than low calories. Yiki Sabaratnam, the scientist in charge of the mushroom research center at the University of Malaya in Kuala Lumpur, Malaysia, says mushrooms are particularly good for us because of what they do before humans harvest them: "Their basic function in the environment is recycling of large molecules, and in the process they produce these fruit bodies, we call them, and they accumulate some of these components."

The components include dozens of nutrients like selenium, vitamin D, potassium and compounds known as beta glucans, which can help fight inflammation in the body. Chronic inflammation can contribute to many diseases of aging, such as cancer, Parkinson's disease, and dementia. Think of mushrooms as the superheroes of the fungi kingdom.

In the lab, researchers have reported all kinds of promising mushroom benefits, from killing cancer in human cells to reducing insulin resistance in diabetic mice.

But research on actual humans hasn't been as prolific.

There are a few outliers: shiitake mushroom extracts seem to help prolong the lives of stomach cancer patients undergoing chemotherapy, and in fact doctors in Japan now prescribe them for that purpose.

Also, maitake (hen-of-the-woods) and scaly wood mushroom extracts seem to strengthen the immune system of some breast cancer patients.

It's hard to draw big conclusions about how these extracts would impact a broad range of people, though, because the studies have been small and targeted to specific populations.

Sabaratnam is studying how mushrooms might someday help fight off dementia, which affects around 50 million people today, with 10 million more added every year.

She and her team reviewed studies of 20 different medicinal mushrooms thought to improve brain function and about 80 different metabolites isolated from those mushrooms that were tested in cells in the lab and in mice. They found that these metabolites improved recovery and function in damaged neural cells and had antioxidant and anti-inflammatory benefits. "We have shown in lab experiments, yes, some of these properties are there," But as she admits, "It's quite a long way to go" to say how these mushroom extracts will work in actual humans.

But that hasn't stopped the dietary supplement industry from jumping on reports of mushroom health benefits. There are teas, coffees and pills containing extracts of mushrooms that promise to reduce stress or jump start your brain.

cont. on p. 5

ARE MUSHROOMS MEDICINE?, CONT.

cont. from p.4

Megan Ware is a dietitian in private practice in Orlando. She sees the potential health benefits of mushrooms, and even drinks mushroom coffee when she wants to feel extra alert. But she warns: "If you're eating cheeseburgers and fries for lunch every day and you eat a couple of mushrooms along with it, that doesn't mean it's going to lower your risk for heart disease or diabetes or any of those lifestyle conditions." As boring as it sounds, a balanced, healthy diet and regular exercise are still the best ways to prevent disease. "I would caution against calling any food magical," Ware says.

Maybe one day, science will be able to prove that mushrooms can help prevent and treat disease. And if not, well, mushrooms are really delicious, so why not add a few new ones to your diet?

Potential Medicinal Benefits

Most edible mushrooms contain high levels of nutrients and antioxidants, are high in fiber and low in cholesterol, and can help us lose weight if we swap them out for less healthy foods. But some appear to contain properties that could potentially benefit human medicine. Here's some selected mushrooms and what we know about them so far.

Per Verdonk/Flickr

Hericium erinaceus
(lion's mane or yamabushitake)

These mushrooms have been shown to inhibit the growth of human cancer cells and protect against neurodegeneration in the lab and in mice.

Urmas Ojango/Flickr

Grifola frondosa (maitake or hen-of-the-woods)

These mushrooms appear to help improve the immune system in some cancer patients and reduced blood glucose levels in rats.

Indiana Public Media/Flickr

Lentinula edodes (shiitake)

Extracts of this widely consumed mushroom may help humans improve their immune system, prolong the lives of some cancer patients, and appear to kill certain viruses in the lab and improve gut microbes in mice.

WildBranch/Flickr

Ganoderma lucidum **(reishi)**

Extracts from this mushroom are credited with reducing obesity in mice by altering their gut bacteria.

cont. on p.15

URBAN 'SHROOMING

by Derek Markham, https://www.treehugger.com/green-food/urban-shrooming...

The urban farming scene is diversifying, and instead of growing veggies and greens, Smallhold is fruiting fungi in minifarms located right in the restaurants where they'll be served.

The virtual explosion in indoor grow units and small vertical urban farms might be an indication that we're starting to come full circle when it comes to local food production, and although many of these home growing units are rather expensive when compared with DIY solutions, it's a great step in the right direction. Growing your own veggies, greens, and herbs at home can be a rewarding hobby, and there's no shortage of information on the web about the myriad ways to do so.

However, when it comes to growing your own culinary mushrooms, there really aren't too many plug-n-play options other than the pre-colonized mushroom kits that are sprouting up these days like, well, mushrooms after a rain. Those types of mushroom kits are easy to grow, considering that most of the work has already been done for you and all you have to do is give it the right fruiting conditions, but they also cost a fair bit more than just buying those same mushrooms ready to eat from the store. But with any luck, having success with a kit might mean that those people are willing to go to the next step, which is to try going from grain spawn to a homemade fruiting substrate, so perhaps that initial cost should be considered an educational investment instead of a purchase. Speaking as someone who is currently up to his ears in home mushroom production, growing fungi is an addictive hobby and it really isn't that difficult once you understand the basics.

So why don't we see more restaurants or markets growing their own mushrooms during a time when self-contained growing units are starting to make it easy to grow lettuce and microgreens at the point of use? Part of that may be because fungi aren't nearly as well-understood by the average person as plants are, which makes them seem mysterious and dangerous, and part of it might be because they do require different conditions to grow and to fruit than plants do, with certain phases of their growth requiring sterile conditions and high humidity, which aren't nearly as easy to create as a growing chamber for greens is.

Photo from Smallhold

But one Brooklyn-based startup is looking to change that, as its mushroom minifarms can bring not only the beauty and mystery of mushrooms into the restaurant, but can also ensure that the chefs have the freshest possible mushrooms right near to hand. If you've ever seen raggedy-looking, bruised, and dried out mushrooms for sale in many grocery stores, you can appreciate the huge difference in quality and taste that freshly-harvested mushrooms have, and for this reason, many chefs go nuts over fresh gourmet mushrooms.

Smallhold builds and manages networked minifarms that are sited in the client's location and filled with pre-colonized bags, after which the vertical minifarm (about the size of a shelving unit) automatically maintains the correct fruiting conditions, so that clients only need supply the space (and the funds, one would presume) for freshly-grown mushrooms. According to a piece in Vogue, Smallhold uses "a substrate made of recycled materials—mostly sawdust mixed with organic matter like wheat berries and coffee grounds," so there's a local reuse component to the business as well.

cont. on p.7

Begin 2018 by Starting a Local Mycoflora Project
by Joan Kutcher, Bill Sheehan, and Stephen Russell

The revitalized, citizen science-focused North American Mycoflora Project (NAMP) is now underway. The success of this undertaking depends on engaging volunteer mycologists to help. The concerted effort of citizen scientists, working closely with professionals, can not only provide accurate identifications but also contribute to understanding the roles of fungi in ecosystem health and changes in biodiversity over time. This is an opportunity to participate in scientific research at a time when science itself is under attack and real data and information are being challenged and demeaned. With so much unknown about fungi there is great opportunity for NAMA-affiliated clubs to make significant contributions. Your participation will help build an online photo-rich database of vouchered and sequenced specimens that will be available to anyone throughout the world.

Let us briefly update you on the current progress of the project:

- We've recently reached out to all the NAMA-affiliated club presidents via email, informing them how to set up their own local project, and how to have their data integrated into the broader North American dataset. Thirty local/regional projects have already been registered across the continent, with more being registered weekly.
- Our website, www.mycoflora.org, has been updated with the latest information and resources on how to start getting involved.
- Within the last few weeks, NAMP has been granted non-profit 501(c)(3) status and is ready to receive and manage grants and tax-deductible donations.
- A Mycoflora Fund has been established, starting with a $20,000 two year grant from the Mycological Society of America and a pledge by NAMA for $11,000 over three years to offer grants for NAMA-affiliated clubs and to sequence specimens from NAMA forays. The online application for sequencing grants will be available soon, with deadlines of April 1st and September 15th for 2018.

Mushroom clubs and individuals registered as participants in the North American Mycoflora Project can use our DNA sequencing service to obtain sequences of macrofungal specimens at a highly discounted rate, as low as $10 per specimen. All submissions must follow NAMP protocols in terms of documentation, metadata, and sample preparation. See the www.mycoflora.org website for details about registration and project protocols.

There's real excitement about this project, and we're here to answer questions you might have. We're looking into providing speakers to groups to explain the registration process and protocols this year. There's even some discussion of having videos available online in the near future. Meanwhile, join the lively Mycoflora 2.0 discussion group on Facebook (facebook.com/groups/mycoflora.2.0/) or email us directly at info@mycoflora.org. We want to hear from you and look forward to working with you in 2018.

Urban Shrooming, cont.

cont. from p. 6

"Smallhold Networked Minifarms are 100% climate-controlled vertical farms. They employ the latest in agricultural technology, applying advanced lighting and water recirculation to high-density growth chambers. The result? 40 times the output per square foot of a traditional farm with 96% less water usage." - Smallhold

According to the Smallhold website, these networked minifarms can also be used to grow lettuce, greens, and herbs, depending on the customer's needs, but considering the sheer number of indoor grow units on the market right now, it's hard to see how these units could compete on growing plants alone, whereas growing mushrooms on-site is something that's actually quite uncommon. In addition to having a supply of fresh mushrooms on hand to go on the menu, restaurateurs can also boast of some of the most unique decor around—bouquets of fresh fungi to be admired by their patrons. No pricing information is available on the Smallhold site, but interested parties can contact the company for more info.

Weird and Wonderful Wild Mushrooms

by Jan Thornhill, 17 Dec. 2016, https://weirdandwonderfulwildmushrooms.blogspot.ca/

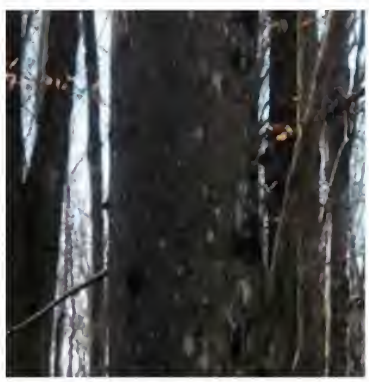
Link to the article to see the references.

A Lichen-liking Fungus: *Illosporiopsis christiansenii*

I like complex fungal stories, especially ones you can hold in one hand. Sometimes these stories are mysteries that need to be solved—and I get to be the detective.

This particular story starts late last fall when my friend Ulli and I were poking around with our dogs in a hardwood forest. We found this and that. And then we found something odd. It was tiny. It was sort of fluffy or fuzzy and fragile. But the best part was that it was hot pink—the same gaudy hot pink as chewed Dubble Bubble gum. It was growing along with lichens on a knobbly, gnarly growth on a fallen branch. The crown of the tree above us sported a plethora of the same knobbly, gnarly growths (which I've found before).

I didn't know the names of any of the characters except the tree, which I'd thought was an ash. Except it turned out not to be an ash, so I didn't even know what the name of the tree was.



Tree Bark

Photos by the author.

Knobbly, Gnarly Growths in Crown

Knobbly, Gnarly Growth Close-up

Lichens and Pink Stuff on Knobbly, Gnarly Growth

cont. on p.9

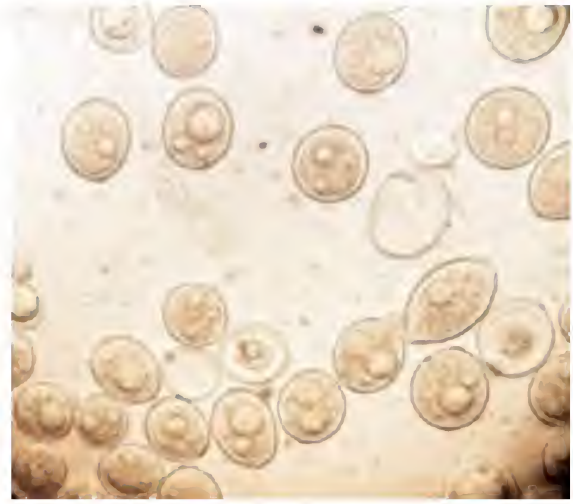
cont. from p.8

Mostly I wanted to know what the pink stuff was. Was it some sort of fungus? An anamorph, or asexual form of a fungus, perhaps? Maybe even an anamorph of a fungus that had caused the knobbly, gnarly growths on the tree? Or did it have something to do with the lichens it was growing so close to, though did not appear to be actually growing on?

Sphaerosporium lignatile anamorph

I've written about anamorphs before (see here). *Sphaerosporium lignatile* is a common one in central Ontario that I didn't include in that post. But, macroscopically, it has similarities to the pink things: it's tiny; its texture is sort of similar, though wetter; and it's fragile. But it's not bubblegum pink; it's orange-yellow. It was similar enough, though, to convince me that the pink stuff was most likely an anamorph.

Sphaerosporium lignatile produces tiny cushions that are, essentially, piles of thousands of conidia.



Sphaerosporium lignatile conidia called chlamydospores

The problem with finding names for asexual forms in the fungal world is that it's way, WAY easier to identify one if you know what its teleomorph, or sexual form, is. I have multitudes of dried samples of still-unidentified anamorphs that proves this. Would my pink guy be relegated to this sad group of nameless characters?

Not if I could help it. Unless I had found the only ones that had ever existed, which I knew was extremely unlikely, I was sure I could find its name since its startling pink popped it out of its lichen and bark surroundings in exactly the same way a crumpled up Dubble Bubble wrapper would pop out among fallen leaves on a forest floor. It seemed probable, rather than simply possible, that it would not only have a name, but that it would also have a strong presence on the internet. So, with devil-may-care optimism, I tried Googling *pink anamorph*.

What a mistake! Apparently the word "anamorph" has been usurped for many new uses that have nothing to do with fungi. I tried typing in *pink anamorph fungus*. This time there were actually a few images of fungi, including at least one pink anamorph I already knew, *Coryne dubia*. But nothing looked anything like my pink things.

Maybe it would help if I found a name for whatever had caused the knobbly, gnarly growths. I figured this should be easy to find since a) the growths are conspicuous, and b) people are curious about such things, especially if such things have appeared on a tree in their yard.

cont. on p.10

cont. from p.9

So, (still thinking my tree was an ash), I went on a merry Google goose chase looking for ash galls.

I found lots of pictures of ash galls...but they were all Ash Flower Mite Galls. Ash Flower Mite Galls look prickly and lightweight, and dangle on flower stems. Nothing like my tree's knobbly, gnarly, woody growths.

Maybe a another word would help. How about ash burls? That got me about a thousand hits, all of them woodworker sites. I tried adding the qualifier, little, and instantly found out that woodworkers use all sizes of burls. Searching with tree crown added didn't help either.

It was starting to occur to me that I had the wrong tree. Maybe it wasn't an ash. Didn't I take a picture of its bark? I downloaded my photos and took a closer look at the bark than I had in the bush. Aha! Not criss-crossy enough to be ash. That's when I remembered that earlier on our walk Ulli had pointed out a hickory nut hollowed out by a red squirrel. It was noteworthy because we don't see them very often up here in central Ontario.

Generally, I'm pretty good with my trees but, up until then, hickory hadn't really been on my tree radar. I see their nuts on occasion, but I've never been able to pinpoint the trees they came from. I think the squirrels covet hickory nuts and are willing to travel a distance to gather them, then carry them all the way home to savour later. Like me driving to the city to buy something obscure, but delicious, like tinned cod liver packed in its own oil.

I got out my tree book (yes, I still use books) and quickly confirmed that the tree was indeed a hickory, specifically a Bitternut Hickory (*Carya cordiformis*). Mystery #1 solved.

Now that this character was named, it was a simple matter to Google hickory gall and—bingo! —I immediately discovered that the growths are called "Hickory Crown Galls."

And, as I suspected, Hickory Crown Galls—or Cankers, are, indeed, caused by fungi. The culprits are members of the genus *Phomopsis*.

So was the pink stuff an asexual form of a *Phomopsis*?

Not a chance, since it turns out that *Phomopsis* species are, themselves, asexual entities, or anamorphs. Their teleomorphs (sexual forms), are

Hickory Crown Gall caused by *Phomopsis sp.*

all members of the genus *Diaporthe*, which themselves are devilishly difficult for an amateur to identify. So, at this point, since more than one species of *Phomopsis* can be found on hickories, I have to be satisfied with a generic solution to Mystery #2: the knobbly, gnarly woody growths are caused by *Phomopsis* sp.. Though some sites state that *Phomopsis* is harmless to the tree, it has also been associated with decline in the crowns of infected trees (see here). I was still stuck with my primary mystery: What the heck was the pink stuff?

The microscope is rarely my first stop on a search, but it was time to stop dilly-dallying on the internet and look at the pink things more closely. I prepared a slide and took it upstairs.

Well—close up it was just FABULOUS!! The pink matter under the slide cover had separated out into little bundles of cartoon characters!! There was nothing else. There were no basidia, no asci, no sexual reproductive parts of any kind. Just friendly little bunches of cartoon characters. Cartoon-character asexual spores, or conidia. Which made it an anamorph. Which also left me back at square one.

Each of the bundles (sporodochia) is made up of a chain (helicospore) of asexual spores (conidia).

cont. on p.11

cont. from p.10

So how about about the lichens? Do lichens, produce anamorphs? I know a little bit about lichens, but I had no idea if the fungal part of a lichen ever produced anamorphs. A search of pink lichen anamorph got me lots of pictures, including many images of two different lichens—*Cryptothecia rubrocinta* and *Dibaeis baeomyces*. Both are lovely, and feature the colour pink, but they weren't what I was looking for.

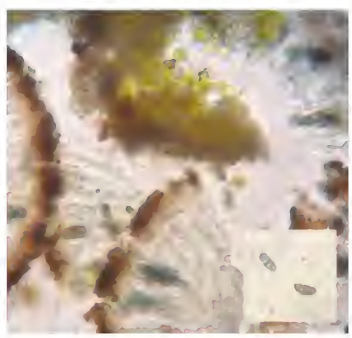
Dibaeis baeomyces, or Pink Earth Lichen (Wikipedia)

Cryptothecia rubrocincta, or Christmas Wreath Lichen (Wikipedia)

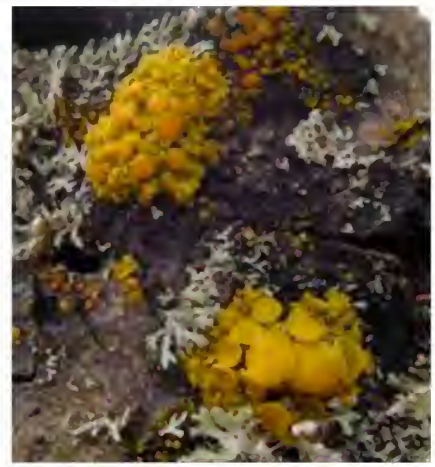
Are lichens attacked by fungal parasites? I tried pink lichen parasite.

And—ta da!—it took maybe a nanosecond for Google images to start displaying my bubble-gum pink character nestled amidst lichens. The second image gave me its name. *Illosporiopsis christiansenii* (synonym, *Hobsonia christiansenii*)—a lichen parasite, or a lichenicolous fungus. Finally, Mystery #3 solved!

And, yes, *I. christiansenii* is also an asexual anamorph—of an as-yet-unknown ascomycete. Its favourite hosts are a number of common, tree-loving members of the genus *Physcia*, and sometimes the egg-yolk coloured X*anthoria parietina*. I wanted to know the host's name, too, so I spent some time with two of the lichens growing on the gall. The egg-yolk yellow one, *Xanthomendoza sp.*, is not known to be a host for *I. christiansenii*. The other, *P. millegrana*, is. Mystery #4 solved!



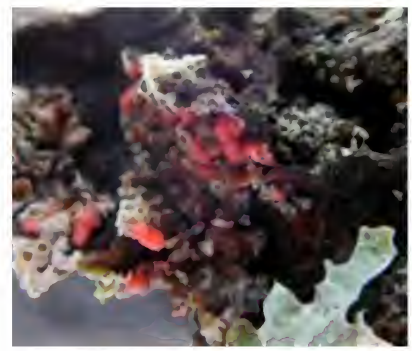
Physcia millegrana with spore-producing apothocia (left) that produced the ascospores & asci (right). The green cells are the cholorophyll producing algae.



Though I thought at first the yellow/orange lichen on the gall was *Xanthoria parietina*, it's actually *Xanthomendoza sp.*.

You're probably shaking your head at my convoluted, maybe even ass-backwards, method of going about finding the name of this shocking-pink character. My only real excuse is that, of the five tiny patches of this fungus, four appeared to have no affiliation with any of the lichens growing on the gall. And even if they *had* been clearly growing on the lichen, I did not yet know—though should have guessed—that there are MANY fungal parasites of lichens (more than 1,800 species described!).

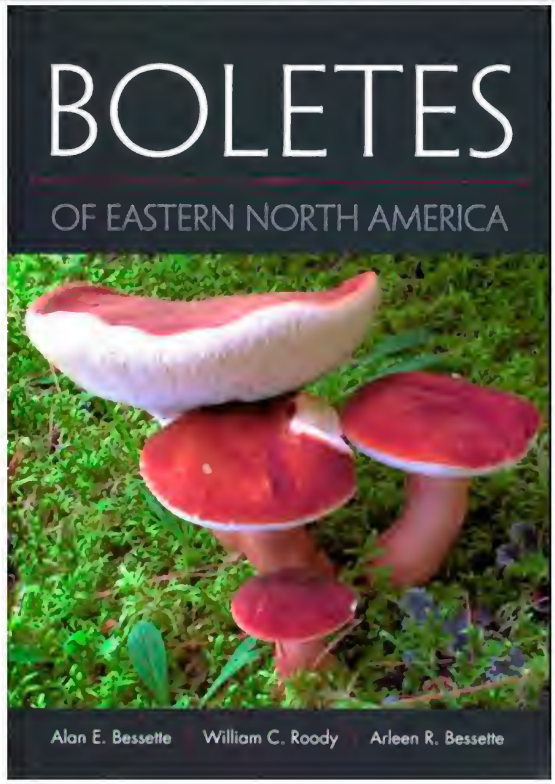
But, if I'd been clever enough to have started my search with either *pink lichen parasite* or *pink lichen anamorph*, I wouldn't have this complex fungal story to tell.



It turns out that *I. christiansenii* isn't particularly rare. In the last few weeks both Ulli and I have found new specimens. This one was not only wetter than the first ones we found, It was also unmistakably growing on the lichen.

Boletes of Eastern North America—Book review
by Steve Trudell

Boletes of Eastern North America
Alan E. Bessette, William C. Roody, Arleen R. Bessette
2016, Syracuse University Press
(http://www.syracuseuniversitypress.syr.edu/)
ISBN: 978-0-8156-3482-9 (hardcover) /
978-0-8156-1074-8 (paper, xx+471 pp.)
$150 (hardcover) / $69.95 (paper)



Boletes of Eastern North America (BENA) is basically a re-do of *North American Boletes: A Color Guide to the Fleshy Pored Mushrooms (NAB)*, published in 2000 by the same authors and press, albeit with a much more limited geographic scope (those parts of the country west of roughly the Mississippi River are not mentioned, even when citing descriptions of transcontinental species), larger photos placed near the text descriptions rather than in segregated sections, slight changes in terminology, a small number of additional species, and lots of different names. And, unlike the earlier book, a less-expensive, but still way-overpriced, paper version is offered right away, rather than years later. Otherwise the approach, tone, and "feel" of the book are much the same as its predecessor.

Like most other Bessette books, this one tries to be "not too technical"—for example, cap, not pileus, stalk, not stipe, and no use of micro characters in keys and only brief mention in the descriptions. This puzzles me, as my sense is that the audience for narrow-focus books like this, as opposed to much of the audience for general field guides, comprises folks who are comfortable with the usual myco-jargon and realize that microscopes are necessary if one wants to identify most of the fungi they find.

The organization of the new book is virtually the same as that of *NAB*. The introductory sections address macroscopic features of boletes, how to approach identifying them, and how to use the book and keys. Much of the material is little-changed from that in *NAB*, although some parts of the latter have been deleted. As in NAB, appendices briefly explain the use of chemical color reactions and microscopic examination in the identification process, and tips for collecting, cooking, and preserving boletes. Newly added is a list of "common tree associates of eastern boletes," which inexplicably includes many arbuscular mycorrhizal tree species with which boletes (the overwhelming majority of which are ectomycorrhizal) would not be expected to occur, except when those trees occur in mixed stands with ectomycorrhizal trees. A glossary, list of references and other resources, and two indexes—one to common names and one to scientific names— complete the book.

In between the intro and the appendices are the keys and descriptions of genera and species. Nine keys are presented, using the same categorization as in *NAB* (although with different names, primarily substituting "stalk" for "stipe")—one for "ring stalks," three for "net stalks" with different colors of pores, one-each for "resin stalks" and "rough stalks," and three for "smooth and miscellaneous stalks" with different colors of pores. The keys are dichotomous until one reaches the ends of some paths, where multiple similar species may be listed, along with brief descriptive comments to help the user choose among them. The leads use macroscopic characters, olfactory features, and habitat/tree associate information, and avoid microscopic characters. Although color changes upon application of KOH and other reagents are emphasized in many descriptions, they are not incorporated in the keys. Running a few species mentally through the keys suggested that they should work well enough for

cont. on p.13

BOLETES, CONT.

cont. from p.12

distinctive species, such as *Suillus spraguei*, but users are likely to have a more difficult time when dealing with groups such as the multitude of red-capped, yellow-pored species.

The first genus described, *Alessioporus*, is a harbinger of the many "new" names used throughout. A wave of splitting has led to many recent changes in bolete names. Some of the genus names and combinations now coming into use are new ones, while others have been around for some time, but not widely used. The fact that the authors chose to use these changed names strikes me as contrary to their approach of avoiding too-technical content. Using the old familiar names and indicating the changes in synonym lists, comments sections, or an appended table, would seem to have been a more consistent approach. The genus descriptions follow a standard pattern… "[*Genus X*] was erected in [year] to accommodate species formerly in [genera *A, B, C*]" followed by a listing (sometimes rather short) of key features that tie the species together, and ending with a statement that the genus is supported by molecular data. Unfortunately, the nature and quality of those molecular data are not discussed—there is wide variation in aspects such as how many DNA segments were sequenced, by whom, by how many different workers in how many studies, what taxa were included in the phylogenetic trees that were used to decide about genus limits, etc.—so readers have no way of knowing whether a particular genus really is well supported. Not all of them are. Given that most of these genus concepts are unfamiliar to many people, a key to the genera would have been very helpful.

The species descriptions include the scientific name with author, a list of selected synonyms, list of common names, an "overview," macroscopic description of cap, pores and tubes, and stalk, habitat and season, distribution and frequency, spore print, microscopic features (almost always just the size and shape of the spores, as well as their color under the microscope [in what mounting medium?]), edibility, and lookalikes. Each is accompanied by a large, generally good- to excellent-quality, color photo, and some species feature more than one image. The photos precede each description, which is an improvement over the *NAB* arrangement in segregated image sections. Unfortunately, the designer never deviated from the "photos-first" layout while also trying to minimize white space, with the result that often the left-hand page contains the description of one species, while the photos on the facing page are confusingly of a different one whose description appears later.

In summary, for those who desire to attach names to the boletes they find in the East, the compilation of descriptions and large clear photos in *BENA* will provide a big help. Thus, if you don't already have any bolete-specific resources, this would make a good addition to your library. However, typical of Syracuse University Press mushroom books, the price, even for the paper version, is not cheap ($69.95 for just under 500 pages—compare that with, for instance, Bill Roody's *Mushrooms of West Virginia and the Central Appalachians*, 520 pages for $35; Tim Baroni's *Mushrooms of the Northeastern United States and Eastern Canada*, 600 pages for $27.95; and Noah Siegel and Christian Schwarz's *Mushrooms of the Redwood Coast: A Comprehensive Guide to the Fungi of Coastal Northern California*, 602 pages for $35). So should folks who already own *NAB* spring for the new book? By my count, 179 of the 192 species in this book are included in *NAB*, mostly with virtually identical descriptions, and often the same photo. As far as I can tell, none of the 13 "newcomers" are particularly widespread and common, and a few are decidedly uncommon, having been found only once or a few times at one or a few locations. So there's not a whole lot of new meat. What the new book does offer is larger photos, many different photos, multiple photos of some species, and a lot of new names that may or may not become the norm. So let your pocketbook be your guide.

Now, for those who are not satisfied with just putting a name on a mushroom, but also want to understand the how's and why's behind the names and classification, a complaint: One of the back-cover promotional blurbs says *BENA* reflects "an authoritative knowledge of the subject." But to me, it doesn't. The authors have done a commendable job compiling information from the literature and photos from their personal collections and other contributors into an attractive and useful package, but there is virtually no "value added," whereby, based on their knowledge and extensive experience, they present critical assessments of the information that is passed along.

cont. on p.14

BOLETES, CONT.

cont. from p.13

We are warned to expect more departures from *Boletus*, but not told that the likely endpoint will be a genus that includes just *B. edulis* and the other members of the "edulis group," such as *B. rex-veris* and *B. rubriceps*. No opinions are provided as to whether or not one should embrace the recently proposed genus names and combinations, many of which have been published online in *Index Fungorum (IF)*. This online database provides an extremely valuable service, attempting to provide up-to-date names for all fungi. However, its e-publishing function unfortunately opens the door to poor science. As long as the procedural details of the *International Code of Nomenclature for algae, fungi, and plants* are followed, there are no obvious controls over what gets published. There is no requirement for any sort of peer review, inclusion of supporting evidence, or discussion of the rationale for the name(s) being proposed. Thus, those with authoritative knowledge of particular groups do us all a great service when they critically assess published name changes, and it would have been nice to see such assessments here.

In a few cases, clearly outdated names are used, contrary to the general approach of using the recent ones. Consider what is presented as *Boletus paluster*. This species was described in *Boletus* by Charles Peck in 1872, but he later decided the species did not belong there and, in 1889, transferred it to *Boletinus*. Over the years, other workers transferred it to other genera, including *Boletinellus, Fuscoboletinus,* and *Suillus*. In 1996, Annette Kretzer published molecular evidence (in a paper cited in *BENA's* reference list) that what was then widely known as *Fuscoboletinus paluster* was better placed in *Suillus* (a conclusion supported by later analyses by others). The reason(s) for its inclusion in *Boletus*, and the absence from the synonyms list of the seemingly best current name (*Suillus paluster* (Peck) Kuntze), are not explained.

A major challenge in producing a North American mycoflora is determining whether the many European names we apply to our mushrooms are warranted—are our mushrooms the same as theirs, or are ours different ones that need their own names? Species that we have viewed as common and widespread, such as *Boletus subtomentosus* (better placed in *Xerocomus*) and *Xerocomellus chrysenteron* (≡ *Boletus chrysenteron*), are likely candidates for addition to the misapplied names list. Although such data as currently exist indicate that the mushrooms we have been calling "*subtomentosus*" and "*chrysenteron*" differ from the European species and that, therefore, it is possible, if not likely, that neither of these species actually occurs in North America, this possibility is not mentioned.

For many mushroomers, these sorts of concerns won't matter. However, those folks who are serious about understanding the boletes and other fleshy fungi may well regret that this book doesn't go the extra mile and provide critical commentary to help us along.

STAMETS & YAO GIFT, CONT.

cont. from p.1

The end goal of the Mycoflora project is a set of monographs. Getting into the weeds of mycology a bit, a monograph would typically focus on a single genus, family, or order, and include detailed descriptions of all the relevant species, deal with issues of nomenclature, give information on habitats and geographic distributions, provide keys to identification, and cite all the important literature.

NAMA's emphasis on supporting affiliated club projects—there are a number of new projects getting underway now—will utilize sequencing to boost the efforts of volunteer scientists across the US, Canada, and eventually Mexico, collecting and vouchering fungi, using data to establish local range and diversity information, so that this information can be used to build monographs, by both academic and volunteer scientists.

The 2018 Annual NAMA Foray in Salem, Oregon
by Sam Landes

SAVE THE DATES!! From October 11-14, 2018, the Annual NAMA Foray will take place in Salem, Oregon. NAMA members will get notice before registration opens in early May. We will be lodging at the Macleay Conference Center just east of downtown Salem. http://experiencemacleay.org/
The center has no hills, very few stairs, lots of parking, well-lit sidewalks and air-conditioning. We will have access to a game room, his and her saunas and a pool for a quick, crisp dip. For those of you who may not wish to share a bathroom, there are many motels located within a 15 minute drive of the Conference Center.

We will offer two pre-foray workshops for a limited number of people—mushroom dye or microscopy. Both classes have limited registration and will take place all day Wednesday, October 10th and half day Thursday, the 11th. We recommend arriving on Tuesday night if you are not local. Registration for these will be on the main conference registration forms that come out in May.

Mushroom Dyeing: taught by Cheshire Marysohn, president of the Cascade Mycological Society

Microscopy: taught by Susie Holmes, a teacher at Lane Community College in the Eugene area, who curates the Rowe-Love Herbarium at LCC. Microscopes will be provided.

Just a little over an hour drive from the Portland International Airport (PDX), Salem is also easily accessible from Eugene and Corvallis. Convenient to the Pacific Coast and the Cascade Mountain Range, there are lots of activities to do before or after the foray: touring some of the many local wineries, sampling local restaurants and brewpubs and visiting Silver Falls State Park. (We will be doing some half-day forays within the park property, but not near the actual spectacular falls.) And to add to your calendar, the annual Breitenbush foray will take place the weekend after the NAMA Foray.

Please join us for a celebration of Oregon mycologists, Oregon mushrooms and Oregon hospitality. Enjoy the outdoors and connecting with new and old friends from all over North America and beyond.

Are Mushrooms Medicine?, cont.

cont. from p.5

Mark Goebel/Flickr

Pleurotus ostreatus **(oyster mushroom)**
In the lab, extracts of this mushroom appear to inhibit growth of breast and colon cancer cells.

ih0.redbubble.net/image.315712719.5512/flat,1000x1000,075,f.jpg

North American Mycological Association
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Change Service Requested

Newsletter of the North American Mycological Association
THE MYCOPHILE

Mushroom of the Issue

Agaricus didymus

Agaricus didymus is a newly described species of edible Agaricus from Southwestern North America. A large, firm, handsome *Agaricus* species, it has a smooth to subtly scaled cap that first yellows, and then turns tawny. Like many species in *Agaricus* section *Arvenses*, it has a pleasant, almondy odor. *A. didymus* fruits during the summer monsoon season, and can be found growing in New Mexico, Colorado and Arizona. These eye-catching mushrooms grow gregariously above 3,000' elevation in spruce forests. We collected many of these magnificent Agaricus, and hundreds of other fascinating fungi, in August, 2017, during the first NAMA regional foray to the White Mountains of Arizona.

from Debbie Viess

Newsletter of the North American Mycological Association

THE MYCOPHILE

Volume 58:3 May-June 2018 www.namyco.org

GARY LINCOFF (1942-2018)
by David Rust, NAMA President

I'm sad to report the passing of Gary Lincoff, a driving force in the early years of NAMA, a great contributor to amateurs, and a constant educator to many, many beginners. He was the recipient in 1986 of the NAMA Award for Contributions to Amateur Mycology, an award that was renamed in his honor two years ago: The Gary Lincoff Award for Contributions to Amateur Mycology. Gary was president of NAMA 1979-1988, and the awards committee chair for many years.

In 1971, Gary and his wife Irene took their first walk with the New York Mycological Society. Predating his involvement with the club was one of its founders: John Cage, who was also instrumental in founding NAMA. When Lincoff discovered mushrooms, he convinced the New York Botanic Garden to allow him to teach classes, a relationship which lasted over 40 years. In 1978, Gary wrote a book with Colorado mycologist and doctor D.H. Mitchel, *Toxic and Hallucinogenic Mushroom Poisoning: A Handbook for Physicians and Mushroom Hunters.* The book's popularity led to publication in 1981 of *The Audubon Society Field Guide to North American Mushrooms*, a watershed moment for people of all interests in the field of mycology. He organized NAMA's "exotic forays" to far places including Siberia, where he learned firsthand about native uses of *Amanita muscaria.*

Gary led forays in New York every week of the year, no matter the weather. He was a constant participant in events across the nation, including the Annual Gary Lincoff Foray, sponsored by the Western Pennsylvania Mushroom Club. Gary was often the Principal Mycologist at the Mid-Atlantic Mushroom Foray. At last year's Telluride Mushroom Festival, participants in the annual parade honored him by coming as "Gary Lincoff", incorporating his standard vest and hat into a costume.

Gary Lincoff was the author or editor of numerous books and articles on mushrooms, including his recent publication, *The Complete Mushroom Hunter, An Illustrated Guide to Finding, Harvesting, and Enjoying Wild Mushrooms.* Gary's insights about edible and poisonous mushrooms, picking urban mushrooms, mushroom recipes, and his experiences with wild mushrooms in various cultures around the world make it a delightful read. He taught courses on mushroom identification at the New York Botanical Garden. A featured "myco-visionary" in the award-winning documentary "Know your Mushrooms", Gary led mushroom study trips and forays around the world. Gary had his own website that included much help for beginners, info on toxicity, and scientific articles on DNA classification of mushrooms.

Cont. on p.3

Upcoming Forays & Other Events

The events page of *The Mycophile* publicizes forays and events of NAMA affiliated clubs which may be of interest to our members. If you would like to list your club's next big event, contact Susan Kayser, Editor: mycophile@namyco.org.
Include date, location, brief description, link for information, and host organization name.

NAMA Regional Foray
28 June-1 July, 2018 in Canton, Mississippi
See the EVENTS - North American Mycological Association page for more information.
You can register from this North American Mycological Association page.

42nd Annual Sam Ristich NEMF Foray
26-29 July, 2018 at State University of NY at Genesco
http://www.nemf.org/index.html

COMA's 40th Clark Rogerson Foray
August 31st to September 3rd 2018 at Hebron, CT.
Registration will be open by the end of May.
(http://www.comafungi.org/special-events/clark-rogerson-foray/).

Gary Lincoff Memorial Foray
15 September 2018 in North Park (Pittsburgh, PA)
The Western Pennsylvania Mushroom Club hosts the Gary Lincoff Memorial Foray on Saturday, 15 September. Guest Speakers will be Taylor Lockwood and Walt Sturgeon. For more information and a link to the registration form, visit: http://wpamushroomclub.org/lincoff-foray/

Wildacres Regional Foray
27-30 September 2018 near Little Switzerland, NC, just off the Blue Ridge Parkway
http://www.wildacres.org/workshops/septemberevents.html#name

NAMA 2018 Annual Foray
11-14 October, 2018 at Salem Oregon.
The chief mycologist is Dr. Joseph W. Spatafora, Professor in the Department of Botany and Plant Pathology at Oregon State University in Corvallis, Oregon. See p. 7 for more information.

In this Issue

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IKEA TO USE MUSHROOM BASED PACKAGING
edited from EcoSnippets/Environmental/mushroom-based-packaging

The furniture retailer is looking at using biodegradable mycelium "fungi packaging" as part of its efforts to reduce waste and increase recycling. It's no secret polystyrene is damaging to the environment. But do you know how exactly that is so? According to a fact-sheet provided by Harvard, polystyrene—which is made from petroleum, a non-sustainable, non-renewable, heavily polluting and fast-disappearing commodity —is not biodegradable, as it takes thousands of years to break down. In addition, it is detrimental to wildlife that ingests it. Despite this well-known data, humans continue to toss more than 14 million tons of the stuff into landfills every year, according to the French ministry of ecology. Estimates are that by 2050, 99% of birds on this planet will have plastic in their guts.

Aware of the environmental problems polystyrene creates, the furniture retailer is looking to use the biodegradable mycelium "fungi packaging" as part of its efforts to reduce waste and increase recycling.

Mycelium is the part of a fungus that effectively acts as its roots, reports *National Post*. It grows in a mass of branched fibers, attaching itself to the soil or whatever surface it is growing on.

The American company Ecovative is responsible for developing the alternative styrofoam. Mushroom Packaging, as it's called, is created by letting the mycelium grow around clean agricultural waste, such as corn stalks or husks. Over a few days, the fungus fibers bind the waste together, forming a solid shape. It is then dried to prevent it from growing any further. The ingenious, eco-friendly packaging is truly a revolutionary invention, and it is one Ikea is intent on utilizing.

Mycelium can be grown into a mold for an exact fit.

Joanna Yarrow, head of sustainability for Ikea in the U.K., relayed to the press that Ikea is looking to introduce the mycelium packaging because a lot of products that traditionally come in polystyrene cannot be recycled with ease or at all. Mushroom Packaging, on the other hand, can be disposed of simply by throwing it in the garden, where it will biodegrade within weeks. The mushroom-based packaging was invented in 2006 and is manufactured in Troy, New York. Already, Ecovative is selling its product to large companies, including Dell—which uses the packaging to cushion large computer servers. In addition, it is working with a number of companies in Britain.

In the past, Ikea launched a vegetarian substitute for meatballs as a more eco-friendly alternative to the Swedish dish served in its cafes. The incentive to do so wasn't purely to please more consumers but to reduce carbon emissions caused by supporting animal agriculture (TrueActivist).

GARY LINCOFF, CONT.

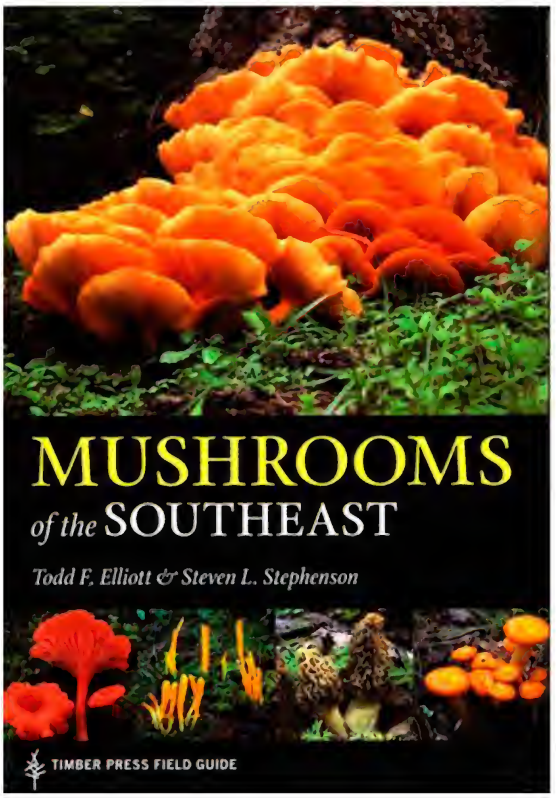
Cont. from p.1

Gary's energy and enthusiasm will be greatly missed by mushroomers all over the world. I urge you to read the excellent New York Times obituary, a memorial posted by the New York Mycological Society, as well as a eulogy published by the John Cage Trust.

Laura Juszczak has proposed an issue of McIlvainea dedicated to Gary's memory. Please submit articles to mcilvainea@namyco.org by August 1.

Book Review: Mushrooms of the Southeast
by Steve Trudell

Mushrooms of the Southeast
Timber Press Field Guide, 2018
Todd F. Elliott and Steven L. Stephenson
Timber Press (http://www.timberpress.com/)
ISBN-13: 978-1-60469-730-8 (5¾ x 8¼ in [210 x 145 mm], Flexibind; 408 pp, 348 color photos) $27.95



Following closely on the heels of Tim Baroni's *Mushrooms of the Northeastern United States and Eastern Canada* (reviewed in *The Mycophile* 58(1), Jan-Feb 2018), Timber Press has released another of its field guides, this time to the mushrooms of the southeastern US.

In this fourth mushroom guide, the Press has largely continued the winning combination of its immediate predecessor—the book offers detailed-enough descriptions and nice large photos, while keeping the thickness in line with being a "field" guide and the list price at $27.95. Where it falls short of the Northeast volume is in species and page count—only 330 species and 408 pages, versus about 540 species and 600 pages.

Todd Elliott, while rather younger than most field guide authors, has spent many years in the forests of the Southeast. He is a broadly knowledgeable naturalist, not just a mycologist, and an accomplished photographer (and fiddle player—I first encountered Todd as a just barely teenager, performing a bluegrass standard with mushroom lyrics at NAMA's 2007 Pipestem foray in West Virginia). Steve Stephenson is a professor at the University of Arkansas and is widely recognized as one of the world's foremost experts on slime molds.

The content and organization of the book are typical for a field guide. The front matter is rather short, consisting of a 27-page Introduction that addresses the geographical coverage of the book (described as the region encompassed by northern Florida, Georgia, South Carolina, North Carolina, Virginia, Delaware, Maryland, West Virginia, Kentucky, Tennessee, Arkansas, Louisiana, Mississippi, and Alabama); an overview of the climate, topography, and vegetation of the southeastern region, including some nice habitat photos; Southeastern Fungi and their Role in the Environment; Mushrooms as Medicine, Food and Nutrition; Mushroom Toxins; Morphology of Mushrooms; What's in a Mushroom Name? and Collecting and Studying Mushrooms.

The back sections include a Glossary (with selected illustrations on the back endpapers), Recommended Reading, and combined Index to both scientific and common names.

The main part of the book occupies about 350 pages, on which are described and illustrated 315 mushrooms, a lichen, a maybe-lichen, 4 rusts, a smut, and 8 slime molds. Each entry includes a large bold-face heading with the species name and authority (with the authors' names spelled out for those of us who don't recognize all of the author abbreviations). This is followed by the common name(s) (they provide at least one for each species), short list of principal synonyms, and family affiliation. The description includes a paragraph detailing macroscopic features such as cap, gills, pores, stalk, ring, flesh, spore print, odor, and taste, along with spore characteristics (but unfortunately no information on other important micro features such as cystidia in inocybes), followed by sections on habitat /

Cont. on p.5

Cont. from p.4

biological role and distribution. Technical jargon is kept to a minimum. The treatments conclude with comments that address key features, similar species, miscellaneous bits of interest, and edibility. Most of the ranges are given with respect to North America, along with details for the Southeast to the extent they are known. Each description includes a photo, most of which occupy the full width (or nearly so) of the page. They range from an occasional clunker to mostly good to excellent with many falling in the latter category. The generous size greatly enhances their utility for identification.

As has been done in the earlier Timber Press mushroom field guides, the identification process involves finding the appropriate morphological or functional group for the specimen, turning to the section of the book where that group is presented (facilitated by color-coded bands at the top of the pages), using the dichotomous keys (when present) to narrow the possibilities, and then carefully comparing the mushrooms in hand with the photos and text descriptions. In the three earlier Timber Press guides, icons for the different groups appear in the front endpapers, accompanied by page references for each of them. Unfortunately, in this one, the same icons used in the Rocky Mountain and Northeast guides appear, but without page numbers, because the groupings used in this book differ from those of the morpho-group icons. Here, finding the section for the group you're after involves starting with a not-particularly-straightforward key to phylum—ascomycetes or basidiomycetes (formally Ascomycota and Basidiomycota). Each of the two phyla has a key to the sub-groups, some based on morphology (e.g., truffles, club fungi, gilled mushrooms, and polypores) and others on function (e.g., plant pathogens and mycoparasites). The group sections each open with a short general introduction, followed in most cases by a dichotomous key intended to reduce the universe of photos that need to be examined in search of a match. These keys utilize macro-morphological and ecological features, and lead to species, single genera, or groups of genera. In general, I had a number of issues with them and have to say that the keys are not the strongest part of the book. Within the group sections, species are presented in alphabetical order. There is no segregation by spore color in the gilled mushrooms and no comprehensive genus descriptions.

POLYPORES AND RELATIVES 291

Bondarzewia berkeleyi **(Fries) Bondartsev & Singer**

BERKELEY'S POLYPORE

FAMILY Bondarzewiaceae

Compound rosette with multiple lobes, individual lobes 7.5–25 cm wide, overall specimens can reach more than 100 cm across, convex when young, becoming flat but with a depressed center with age; surface dry, hairy or glabrous, often rough or pitted, creamy white to yellow, often zonate; pore-bearing surface white, pores 0.5–2 mm wide, angular; stalk 5–10 cm long and 3–5 cm wide, short, stout, irregularly shaped, yellow to yellowish brown; spores white in mass, 6–8 µm round, strongly warted, amyloid.

Habitat/Biological Role: Occurring as solitary to clustered fruiting bodies at the base of living broadleaf trees and stumps; fruiting from early summer to early fall. Decomposer of wood.

Distribution: Widely distributed throughout the Southeast, less common in other parts of North America.

Comments: The fruiting bodies of *Bondarzewia berkeleyi* can become rather large, weighing as much as 15 kg. This fungus is edible when young but becomes bitter-tasting and fibrous with age. It is possible to confuse a young specimen of *B. berkeleyi* with the edible *Meripilus sumstinei*, but the latter stains black and has smaller individual lobes. *Grifola frondosa* is also similar and edible, but it has smaller individual lobes.

Example of page.

Given that the Southeast contains the highest diversity of mushrooms in North America (and rivals any other area in the world), that only about 320 taxa are presented is surprising—I would have expected twice that number. Most of the names and concepts are up to date (sometimes the more recent names are included as synonyms), although there are a few notable exceptions, such as *Craterellus ignicolor* and *Cr. tubaeformis* appearing as *Cantharellus ignicolor* and *Ca. tubaeformis* and the transfer of *Boletus frostii* to *Exsudoporus* not being acknowledged. In addition, some European names such as *Cantharellus cibarius* and *Daldinia concentrica* are used even though it is well established that the American fungi to which we have been applying those names are different, often undescribed, species.

Previous field guides to southeastern mushrooms include *Mushrooms of the Great Smokies* (L.R. Hesler 1960), *A Field Guide to Southern*

Cont. on p.6

North American Macrofunga
by Raymond Archambault

After looking into your project of sequencing North American fungi, particularly macrofungi, I am glad that your organization has started to use the term "**Fungarium**"; which means a collection dedicated to a particular purpose in mycology concerning dry fungi specimen collections.

Congratulations! Adopting the term Fungarium in your organization should be a much needed enhancement that highlights its purpose scientifically. A few years ago, only two fungaria in North America were identified: *Fungarium of Royal Toronto Museum* and *Fongarium du Cercle des mycologues de Montréal.* (If I'm wrong, please correct me.) Welcome to join us.

What will the next step be? Despite the traditional naming, more and more scientists, professionals and amateurs know that mycoflora doesn't correspond to macrofungi. Universally, "flora" refers to plants, in almost all languages. Based on scientific evidence, funga [sic] (Fungi Kingdom) and flora (Plant kingdom) are not closely linked in their evolution; this evidence must be reflected in terminology. Using the term of mycoflora for the study of macrofungi contradicts scientific evidence.

Biological sciences indicate that Funga ("fifth kingdom") exists in nature as well as Fauna and Flora. Related evidence confirms that fungi are closer to Fauna than Flora in the tree of life. As the purpose of your organization has a focus on "knowledge of macrofungi", the logical title of your organization should scientifically include "Macrofunga" but not Mycoflora. Thus, please consider replacinge Mycoflora with Macrofunga.

I trust that the **North American Macrofunga** organisation is making important contributions to the knowledge base of macrofunga in North America, particularly in providing financial support for sequencing DNA of mushrooms from small fungaria. This is very much appreciated in helping to develop better understanding in taxonomy and systematic study of macrofunga in North America.

Thank you very much for your consideration in advance.

Raymond Archambault
Conservateur du Fongarium (CMMF), Centre sur la biodiversité, Université de Montréal
Jardin botanique de Montréal, 4101, rue Sherbrooke Est, Montréal (Québec) H1X 2B2

Some slides from Raymond Archambault's presentation at the NEMF Foray of 2014 are on page 7.

Book Review, continued

Cont. from p.5

Mushrooms (Weber and Smith 1985), *Mushrooms of West Virginia and the Central Appalachians* (Roody 2003), *Mushrooms of the Southeastern United States* (Bessette et al. 2007), and *Macrofungi Associated with Oaks of Eastern North America* (Binion et al. 2008). *Mushrooms of the Southeast* and two more, not-yet-reviewed, guides—one to the Georgia Piedmont and the other to the Carolinas—add to the coverage for this part of the continent. By my count, together, these eight volumes describe (in some detail) and illustrate nearly 1200 species, with coverage in individual books ranging from 184 to 604 species. Each of the eight includes a number of species that none of the others do, ranging from 34 to 137. On average, a species occurs in 2.3 of the books—548 appear in only one book, and only 7 appear in all eight. *Mushrooms of the Southeast* contains 50 species unique to it and an additional 41 that appear in only one of the other books. Thus, southeastern mushroom identifiers will need this book (along with all the others!) to maximize their chances for success. It offers appropriately detailed, up-to-date coverage in an attractive, conveniently sized, and reasonably priced package. Buying it should be an easy decision for mushroomers in the Southeast.

NAMA Annual Foray 2018 in Salem, Oregon
by Sam Landes

The 2018 NAMA Foray will take place Thursday, October 11–Sunday October 14. It will be held at the Macleay Conference Center 2887 74th Ave. SE. Salem, Or 97301

There will be a microscopy class held Wednesday afternoon October 10 and all day Thursday. There will also be dyeing workshop held all day Thursday. People signing up for those will want to arrive on Wednesday.

NAMA will also be holding its annual Board meeting on Thursday.

The Chief Mycologist will be Joey Spatafora who teaches at Oregon State University in Corvallis.

Our speaker list is concentrating on presenters from the Northwest and will be posted soon on an information webpage about the Foray.

Our mushroom forays will be spread out from the Oregon Coast to the Cascades and including nearby parks like Silver Falls State Park.

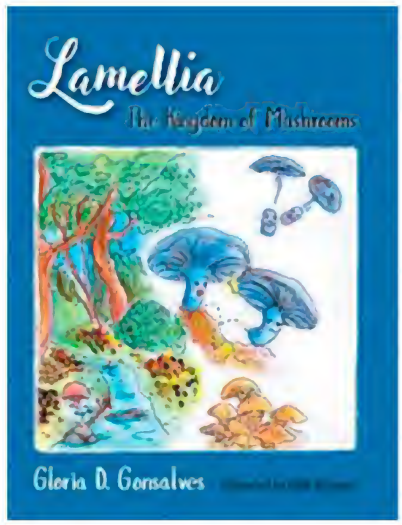
Registration should be open by May 16. We will be sending out a notice to all members with the web link to the registration form.

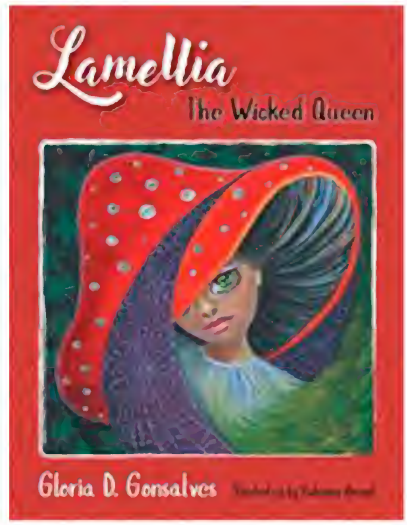
Book Reviews: "Lamellia: The Kingdom of Mushrooms" and "Lamellia: The Wicked Queen"

by Susan Kayser

Gloria D. Gonsalves has written two short, charming books that are a good introduction for very young children to the world of mushrooms. Lamellia: The Kingdom of Mushrooms describes the inhabitants of Lamellia: the "Indigos" are the soldiers ("milk mushrooms"), the "Honeys" (who clump for shields), and the "Lanterns" (jack-o'-lanterns) who fool Lamellia's enemies.

Then, one day, a baby girl is found. What are they to do with her?





Baby Tiara, from *The Kingdom of Mushrooms*

The solution is found in the properties of the various mushroom inhabitants. Despite having known humans primarily as predators, they take in the child and care for her. Many Americans fear wild mushrooms, so the friendliness of those in this book may serve to interest youngsters in searching out wild mushrooms for themselves, and learning about nature by experience.

The 16 illustrations by Nikki Ngombe, opposite the 16 text pages, are close enough to actual mushrooms to show a child the characteristics of each type, while making them appealing.

The second book, Lamellia: The Wicked Queen, is a rewrite and extension of the first. There is less about the individual kinds of mushrooms, and more plot, which revolves around the wish of the Wicked Queen, an Amanita, for a child, and her poor choices in getting one. The story again puts forward the importance of kindness. There are only 6 illustrations here, by Katerina Brunot, and the 21 pages of text have more content.

The author has written several other books for children and also some for adults. She also has published books of poetry. (For examples, see the web page: Gloria D. Gonsalves, Author at Naturewriting.)

[Note: A lamella is a thin scale or layer of tissue or bone; in mycology, it's a gill.]

Voucher Report for the 2017 North American Mycological Association Foray

Northwoods Foray
Cable, Wisconsin
September 7-10, 2017

Patrick R. Leacock, NAMA Voucher Collection Project, mycoguide@gmail.com

Summary

The 2017 annual foray was held September 7 - 10 at the Lakewoods Resort near Cable, Wisconsin. The foray was organized by Britt Bunyard (Fungi Magazine), Emily Stone (Cable Natural History Museum), and Chief Mycologist Patrick Leacock (Field Museum). Collecting areas included many areas of Chequamegon-Nicolet National Forest, as well as several state parks and natural areas.

Many thanks go to Adele Mehta, foray recorder, and the NAMA-sponsored voucher assistants: Christin Anderson (Univ. of Alaska, Fairbanks), Arian Farid (Univ. of South Florida), Louis Meike (Univ. of Minnesota), Stephen Russell (Purdue Univ., Indiana); and Bruch Reed (Ill. Myc. Assn.). Big thanks to Emily Stone and her foray team and all the volunteers who ran the collecting trips, specimen sorting, and display room. We thank the board and trustees of NAMA for their continued support of the voucher program. The NAMA specimens are accessioned into the permanent herbarium collection at the Field Museum of Natural History (F). The slime molds were sent to the Stephen Stevenson herbarium, University of Arkansas (UARK).

Molecular work is underway to generate DNA sequences for many of the foray vouchers. Stephen Russell led the work of obtaining tissue samples during the foray from most of the vouchers. The DNA sequencing is being carried out by Rytas Vilgalys and his students at Duke University.

This species list has 500 taxa (genus, species, and varieties), comprising 97 ascomycetes (36 lichens), 391 basidiomycetes, 1 zygomycete, and 11 myxomycetes. The most diverse genera were *Lactarius & Lactifluus* (26), *Cortinarius* (19), *Russula* (18), and *Amanita* (14+). Identifications were made by 35 persons including Walter E. Sturgeon, R. Greg Thorn, Patrick R. Leacock, Dianna G. Smith, La Monte Yarroll, N. Jay Justice, Dorothy C. Smullen (lichens), Thomas J. Volk, Anna Gerenday, Matthew P. Nelsen (lichens), and 25 others. There are 535 voucher collections preserved from the foray. Taxa with more than one voucher specimen are indicated "(2)". Five listed names do not have voucher specimens, marked with asterisk; some were not worth preserving or were lost.

These vouchers with images are available online at the Field Musem NAMA Voucher Collection Project and MyCoPortal. They will be also posted on Mushroom Observer: http://mushroomobserver.org/observer/show_user/3534. Information about the Voucher Collection project can be found on the NAMA website: http://www.namyco.org/voucher_collection_project.php

Cont. on p.10

VOUCHER REPORT FOR THE 2017 NAMA FORAY, CONTINUED

Cont. from p.9

Kingdom Fungi

Ascomycota

Aleuria aurantia
Amandinea cf. punctata
Apiosporina morbosa
Arthonia caesia
Arthonia cf. radiata
Ascocoryne sarcoides
Bisporella citrina
Bulgaria inquinans
Calicium trabinellum
Candelariella cf. xanthostigma *
Chlorencoelia versiformis
Chlorociboria aeruginascens
Chlorociboria aeruginosa
Chromelosporium sp.
Cladonia coniocraea
Cladonia cristatella
Cladonia cf. fimbriata
Cladonia cf. gracilis subsp. turbinata
Cladonia cf. mitis
Cladonia rangiferina
Claviceps purpurea
Cordyceps militaris
Cudonia sp.
Daldinia cf. childiae
Diatrype stigma
Evernia mesomorpha
Flavoparmelia caperata
Flavopunctelia soredica
Geoglossum atropurpureum (2)
Graphis scripta s.l.
Gyromitra infula
Helvella costifera
Helvella crispa complex
Helvella macropus
Helvella sulcata
Holwaya mucida
Humaria hemisphaerica
Hymenoscyphus fructigenus
Hypogymnia physodes
Hypomyces cervinigenus
Hypomyces hyalinus
Hypomyces lateritius
Hypomyces luteovirens
Hypomyces ochraceus *
Hypoxylon fragiforme
Ionomidotis irregularis (3) (Neolecta)
Lecanora symmicta
Lecanora thysanophora
Leotia lubrica
Leotia viscosa
Lepraria aff. lobificans
Lobaria pulmonaria
Melanelixia subaurifera (Melanelia)
Microglossum fumosum
Microglossum olivaceum
Microglossum rufum
Myelochroa aurulenta
Myelochroa galbina
Neobulgaria pura
Neocudoniella radicella
Otidea alutacea
Otidea grandis
Otidea onotica
Parmelia sulcata
Peltigera aff.
Peltigera canina
Peziza sp.
Peziza ostracoderma
Peziza phyllogena
Peziza repanda
Peziza varia
Phaeocalicium polyporaeum
Phaeohelotium epiphyllum
Phaeophyscia rubropulchra
Physcia aipolia
Physcia millegrana
Physconia cf. leucoleiptes
Punctelia rudecta
Ramalina americana group
Scutellinia sp.
Scutellinia erinaceus
Scutellinia pennsylvanica
Scutellinia scutellata
Scutellinia setosa *
Spadicoides clavariarum (Diplococcium)
Spathularia flavida
Tatraea macrospora
Tolypocladium capitatum (Cordyceps)
Tolypocladium ophioglossoides (2) (Elaphocordyceps)
Trichoglossum walteri
Tuber cf.
Usnea filipendula
Usnea hirta
Xanthoria fallax
Xylaria cornu-damae
Xylaria longipes (3)
Xylaria polymorpha

Basidiomycota

Agaricus cf. macrosporus
Alloclavaria purpurea
Amanita sp. (3)
Amanita amerifulva nom. prov. Tulloss (2)
Amanita bisporigera complex
Amanita brunnescens
Amanita flavoconia
Amanita frostiana
Amanita lavendula
Amanita muscaria var. guessowii
Amanita porphyria
Amanita section Vaginatae
Amanita sinicoflava
Amanita sp-WI01 Tulloss
Amanita suballiacea
Amanita variicolor nom. prov. Lamoureux
Ampulloclitocybe clavipes
Armillaria gallica
Armillaria mellea
Armillaria sinapina
Armillaria solidipes
Arrhenia epichysium (2)
Artomyces pyxidatus
Asterophora lycoperdoides
Astraeus smithii
Auriscalpium vulgare
Austroboletus gracilis
Austroboletus gracilis var. flavipes
Baeospora myosura
Baeospora myriadophylla
Bjerkandera adusta
Bolbitius titubans var. titubans (B. vitellinus)
Boletellus projectellus
Boletellus russellii *
Boletus cf. bicolor
Boletus cf. chippewaensis
Boletus edulis group (3)
Boletus pallidus
Boletus subcaerulescens
Boletus subtomentosus
Boletus subvelutipes
Boletus variipes

Cont. on p.11

Voucher Report for the 2017 NAMA Foray, continued

Cont. from p.10

Bovista pusilla (Lycoperdon)
Calvatia craniiformis
Calvatia fragilis
Cantharellula umbonata (2)
Cantharellus sp. (2)
Cantharellus cinnabarinus
Cantharellus enelensis
Cerioporus varius (Polyporus)
Cerrena unicolor
Chalciporus piperatoides
Chalciporus piperatus
Chondrostereum purpureum
Clavaria fragilis (2) (C. vermicularis)
Clavaria fumosa
Clavaria rubicundula (2)
Clavaria zollingeri (2)
Clavariadelphus americanus
Clavariadelphus pistillaris
Clavulina cinerea
Clavulina cristata
Clavulina rugosa
Clavulinopsis corniculata
Clavulinopsis fusiformis
Climacodon septentrionalis
Clitocella mundula (Clitocybe)
Clitocybe irina
Clitocybe robusta
Clitocybe subconnexa (Lepista)
Clitocybula abundans
Clitocybula familia (2)
Clitopilus prunulus
Collybia cirrhata
Collybia cookei
Collybia tuberosa
Coltricia cinnamomea
Coltricia perennis
Conocybe apala (C. lactea)
Coprinellus micaceus complex
Coprinopsis atramentaria
Cortinarius armillatus
Cortinarius balteatocumatilis
Cortinarius bolaris
Cortinarius camphoratus
Cortinarius caperatus
Cortinarius collinitus
Cortinarius corrugatus
Cortinarius distans
Cortinarius flexipes
Cortinarius huronensis
Cortinarius iodes
Cortinarius laniger group
Cortinarius mucosus
Cortinarius scaurus
Cortinarius semisanguineus
Cortinarius squamulosus
Cortinarius torvus
Cortinarius traganus
Cortinarius trivialis
Craterellus fallax
Craterellus ignicolor
Craterellus tubaeformis (2)
Crepidotus sp.
Crepidotus crocophyllus
Crepidotus fusisporus
Crepidotus cf. mollis
Crinipellis zonata
Cuphophyllus pratensis
Cuphophyllus virgineus (2)
Cystoderma amianthinum
Cystoderma granosum
Dacrymyces chrysospermus
Daedalea quercina
Daedaleopsis septentrionalis
Entoloma sp. (Leptonia)
Entoloma abortivum
Entoloma griseum
Entoloma luteum
Entoloma murrayi (Inocephalus)
Entoloma quadratum
Entoloma sericeum
Flammulaster sp.
Flammulina velutipes
Fomes fomentarius
Fomitiporia bakeri (Phellinus)
Fomitiporia punctata (Phellinus)
Fomitopsis betulina (Piptoporus)
Fomitopsis cajanderi
Fomitopsis pinicola
Fuscoporia gilva (Phellinus)
Galerina marginata
Ganoderma applanatum
Ganoderma tsugae
Geastrum saccatum
Gliophorus irrigatus
Gliophorus laetus (2)
Gliophorus perplexus
Gliophorus psittacinus
Gloeophyllum sepiarium
Gloeoporus dichrous
Gloioxanthomyces nitidus
Grifola frondosa
Gymnopilus luteus
Gymnopilus sapineus
Gymnopus confluens
Gymnopus dryophilus
Gymnopus subnudus
Gyroporus castaneus
Gyroporus cyanescens var. violaceotinctus
Hapalopilus nidulans
Harrya chromapes
Hebeloma sp.
Hebeloma incarnatulum (2)
Hemistropharia albocrenulata
Hericium americanum
Hericium coralloides
Hohenbuehelia mastrucata
Hohenbuehelia niger
Humidicutis marginata var. marginata
Hydnellum aurantiacum
Hydnellum caeruleum
Hydnellum ferrugineum
Hydnellum scrobiculatum
Hydnellum spongiosipes
Hydnochaete olivacea
Hydnum sp.
Hydnum repandum (2)
Hygrocybe cf.
Hygrocybe cantharellus
Hygrocybe chlorophana
Hygrocybe conica
Hygrocybe flavescens
Hygrocybe parvula
Hygrocybe punicea
Hygrophoropsis aurantiaca
Hygrophorus eburneus
Hygrophorus glutinosus
Hygrophorus pudorinus
Hygrophorus russula
Hygrophorus tennesseensis
Hymenochaete tabacina
Hymenopellis furfuracea
Hymenopellis limonispora
Hymenopellis rubrobrunnescens
Hypholoma capnoides

Cont. on p.12

Voucher Report for the 2017 NAMA Foray, continued

Cont. from p.11

Hypholoma lateritium
Hypsizygus marmoreus
Imleria badia (Boletus)
Inocybe sp. (2)
Inocybe geophylla
Inocybe lilacina
Inocybe aff. sororia
Inonotus glomeratus
Inonotus obliquus
Ischnoderma resinosum
Laccaria sp.
Laccaria amethysteo-occidentalis (2)
Laccaria amethystina (2)
Laccaria bicolor
Laccaria laccata
Laccaria longipes
Laccaria nobilis
Laccaria ochropurpurea
Laccaria cf. proxima
Laccaria striatula (2)
Lactarius sp.
Lactarius affinis
Lactarius argillaceifolius
Lactarius camphoratus
Lactarius cf. chelidonium
Lactarius deceptivus
Lactarius deterrimus (2)
Lactarius glyciosmus
Lactarius helvus (L. aquifluus)
Lactarius hibbardae
Lactarius indigo
Lactarius lignyotellus
Lactarius lignyotus
Lactarius lignyotus var. marginatus
Lactarius mucidus
Lactarius cf. oculatus
Lactarius pseudomucidus
Lactarius pubescens
Lactarius pyrogalus
Lactarius sordidus
Lactarius thyinos
Lactarius torminosus
Lactarius uvidus
Lactarius vinaceorufescens
Lactifluus glaucescens
Lactifluus subvellereus
Laetiporus huroniensis
Laetiporus sulphureus
Leccinellum albellum (Leccinum)
Leccinum aurantiacum
Leccinum holopus
Leccinum insigne group
Leccinum scabrum
Leccinum subglabripes (Boletus)
Leccinum variicolor
Lentinellus cochleatus
Lentinellus micheneri
Lentinellus ursinus
Lentinus arcularius (Polyporus)
Lentinus brumalis (Polyporus)
Lepiota aff. clypeolaria
Lepista nuda (2) (Clitocybe)
Leucocybe connata (Clitocybe)
Leucogloea compressa (Pleurocolla)
Leucopaxillus albissimus
Leucopholiota decorosa
Limacella illinita
Lycoperdon curtisii (Vascellum)
Lycoperdon marginatum (2)
Lycoperdon perlatum
Lycoperdon pyriforme
Lyophyllum decastes
Marasmius capillaris
Marasmius cohaerens
Marasmius epiphyllus
Marasmius rotula
*Marasmius strictipes **
Marchandiomyces corallinus
Merulius tremellosus (Phlebia)
Multiclavula mucida
Mycena inclinata
Mycena leaiana
Neoalbatrellus caeruleoporus (Albatrellus)
Neofavolus alveolaris (Polyporus)
Nigroporus vinosus
Ossicaulis lignatilis
Oxyporus populinus
Panellus stipticus
Paxillus involutus
Perenniporia sp.
Phaeolus schweinitzii
Phaeotremella foliacea s.l. (Tremella)
Phellodon melaleucus (P. alboniger)
Phlebia acerina
Phlebia radiata
Phlebiopsis crassa
Pholiota alnicola
Pholiota aurivella
Pholiota flammans
Pholiota malicola
Pholiota squarrosoides
Phyllotopsis nidulans
Picipes badius (Polyporus)
Pleurocybella porrigens
Pleurotus dryinus
Pleurotus levis (Lentinus)
Pleurotus ostreatus
Pleurotus pulmonarius
Plicaturopsis crispa (2)
Pluteus admirabilis
Pluteus cervinus
Pluteus chrysophaeus
Pluteus flavofuligineus
Pluteus granularis
Porodaedalea pini (Phellinus)
Porphyrellus porphyrosporus
Postia caesia, likely Postia livens
Postia ptychogaster
Postia stiptica
Protostropharia sp.
Psathyrella conissans (3)
Pseudoclitocybe cyathiformis (2)
Pseudohydnum gelatinosum
Pseudomerulius curtisii
*Punctularia strigosozonata **
Ramaria botrytis
Ramaria formosa
Ramaria cf. rubrievanescens
Ramaria stricta
Ramariopsis kunzei
Retiboletus ornatipes
Rhodocollybia maculata
Rhodocollybia maculata var. scorzonerea
Rhodocybe cf.
Rickenella fibula
Russula sp.
Russula cf. adulterina
Russula cf. adusta
Russula aeruginea
Russula betularum
Russula brevipes
Russula claroflava
Russula cyanoxantha
Russula decolorans

Cont. on p.13

Voucher Report for the 2017 NAMA Foray, continued

Cont. from p.12

Russula cf. fucosa
Russula fulvescens
Russula gracilis
Russula laurocerasi
Russula mariae
Russula paludosa
Russula cf. parvovirescens
Russula aff. silvicola
Russula variata
Sarcodon sp.
Sarcomyxa serotina (Panellus)
Schizophyllum commune
Scleroderma sp.
Scleroderma cepa
Scleroderma citrinum (2)
Scleroderma septentrionale
Sebacina pallida (Tremellodendron)
Singerocybe adirondackensis
Sistotrema confluens
Spongipellis sp.
Stereum gausapatum
Stereum subtomentosum (2)
Suillus acidus
Suillus albidipes
Suillus americanus
Suillus cavipes
Suillus granulatus (S. weaverae)
Suillus grevillei
Suillus neoalbidipes
Suillus punctipes
Suillus spraguei
Suillus subaureus [MIN]
Tapinella atrotomentosa
Tapinella panuoides
Thelephora terrestris
Thelephora vialis
Trametes betulina
Trametes cinnabarina
Trametes gibbosa (2)
Trametes hirsuta
Trametes cf. ochracea
Trametes cf. pubescens
Trametes versicolor
Tremella mesenterica
Trichaptum abietinum
Trichaptum biforme
Tricholoma sp.
Tricholoma caligatum
Tricholoma equestre
Tricholoma saponaceum
Tricholoma cf. sejunctum
Tricholoma sulphureum
Tricholoma ustale
Tricholomopsis decora
Tricholomopsis rutilans
Turbinellus floccosus
Tylopilus felleus
Tyromyces chioneus
Xanthoconium affine
Xeromphalina campanella
Xeromphalina kauffmanii
unknown coral, near Clavulinopsis

Zygomycota

Syzygites megalocarpus

Kingdom Protozoa
Amoebozoa

Fuligo candida
Fuligo luteonitens
Fuligo septica
Hemitrichia clavata
Lycogala epidendrum
Lycogala terrestre
Stemonitis fusca
Stemonitis splendens
Trichia favoginea
Tubifera ferruginosa
Tubulifera sp.

New NAMA Videos
by David Rust

I'm thrilled to announce that NAMA has two new promotional videos. They were shot and edited by James Strezlinski (Spiel) and color, audio and graphics completed at Pixel Farm, with producer Kathy Yerich (Pixel Farm). These were filmed at the NAMA Anual Foray 2017.

The two videos are on the new NAMA YouTube channel. I encourage you to see "Discover NAMA" on YouTube, and "Vouchering and the North American Mycoflora project."

To all the wonderful folks who made this happen: Thank you for appearing in the videos we shot at last year's foray and helping to promote NAMA and the mycoflora project.

We will post these more widely in the next couple of days, but I wanted you to be among the first NAMA members to see them. NAMA's 25 program files will also be added to this channel soon.

Enjoy!

Annual NAMA Photo Contest
by John Plischke

2018 Annual Photo Contest Rules

Eligibility

The Photo contest is open to all mushroomers. NAMA membership is not required to enter. Images that have previously won (including honorable mention) are not eligible. Up to 15 images may be entered per person, with a maximum of 6 in the Pictorial, 6 in the Documentary, and 3 in the Judges Option to make a total of up to 15 images. Closing date: All entries must be received by the Contest Director on or before **August 11, 2018**.

Subject Material

For Pictorial and Documentary, organisms from the *Myxomycota* (slime molds) and the classes *Basidiomycetes* and *Ascomycetes* of the *Eumycota* ("true fungi") are eligible. For Judge's Option, nearly anything goes, so long as the theme relates to fungi, and fungi are a key element of the photograph.

Entry Divisions

Limited or Advanced. If you won 1st, 2nd or 3rd place two or more times before, then you must enter in the Advanced division. If you won less than twice before, you can enter the Limited Division .

Categories

Pictorial: This division is for single photos that illustrate the beauty and variety of fungi in form and color. Mushrooms should not be cut or turned over and should look natural. Judging criteria include consideration of both technical (focus, depth of field, exposure, lighting, color, absence of distracting elements) and artistic (composition, color, background, lighting) aspects.

Documentary: For single photographs especially suited as illustrations in a field guide of monograph, or for use in a lecture. Emphasis is placed on portrayal of key morphological characteristics such that the usefulness of the image as an identification aid is maximized. Subjects may be shot in the field, laboratory or studio. and the photographer has complete freedom to cut, process, manipulate, or orient the specimen in any desired manner to achieve the goal. Close-ups of single features and photo-micrographs are acceptable. Judging criteria will be the same as in the Pictorial category but they will be of secondary importance to the overall mycological utility of the photo. Accurate identification of the subject will be a consideration.

Judge's Option: For single photos or series which do not fit into the Pictorial and Documentary divisions. Examples include time-lapse series, ecological relationships of fungi (e.g. fairy rings), fungi with animals, people enjoying fungi, humor, etc.

Awards: 1st, 2nd and 3rd place will be awarded in Pictorial, Documentary and Judges Option. Honorable Mentions will also be noted for some Pictorial and Documentary photos. This year award certificates will be emailed or given to first through third place winners.

Marking, Listing and Submitting Digitals: Let us know if you are entering the limited or advanced division. The digital photo's file name should include three things: D (for Documentary) JO (for Judges Option) or P (for Pictorial), and your (as the photographer) initials, followed by the Genus and species of the fungi, or the title for the Judges Option photo. Digital images may be emailed or mailed on a CD or DVD and will not be returned. Mail images to John Plischke III, 411 Center Avenue, Greensburg, PA 15601 [(724) 832-0271] or to Fungi01@aol.com

If emailing images in, please include your name, address and phone number. Images can also be submitted using free file mailing programs such as http://www.mailbigfile.com/ or Dropbox.

Reproduction: Entry in the contest constitutes the consent of the photographer to allow NAMA to reproduce copies of each winning image (including Honorable Mention, etc.) for circulation or use by NAMA Committees, among the membership, NAMA brochures, signs, advertising and affiliated societies. NAMA also reserves the right to post images of the winning images on the NAMA web pages and in *The Mycophile* and to be used by the marketing committee. All copyrights remain with the photographer.

Photo of You

If possible please include a photo of yourself, so we can use it to introduce the photographers. This is not a requirement and the photo of yourself is not counted as an entry. It has also been requested that we start to collect data on where the mushroom photo was taken. We don't need GPS coordinates, but it would be helpful to have a city/county/park/state name—something basic to post on the site for future reference.

Mushroom of the Issue

Fusicola merismoides
by Walt Sturgeon

North American Mycological Association
Barbara Ching
2019 Ashmore Drive
Ames, IA 50014-7208

Change Service Requested

Newsletter of the North American Mycological Association
THE MYCOPHILE

Mushroom of the Issue

(See previous page for enlarged photos.)

Fusicola merismoides

This fungal potpourri of remarkable species is a conglomeration of various species resulting in an oozing, dripping orange slime. It is most often seen in the spring, often by morel hunters. It typically covers a grape vine or stump. It may form slimy stalactites of orange goo. No two samples have been found genetically identical. Some report a sweet smell which may come from yeast. The mix may also include a different yeast species which gives it the orange color and actually kills some of the other fungi involved. Some Zygomycetes are in the mix as well. There needs to be more study on this complex organism.

http://www.dnabarcodes2011.org/conference/program/schedule/treeslime.pdf

from Walt Sturgeon

Newsletter of the North American Mycological Association

THE MYCOPHILE

Volume 58:4 July-August 2018 www.namyco.org

New Mycology Scholarship Founded in Honor of Mike Beug

by Nikki McCoy (Evergreen)

Last year entrepreneur and mushroom expert Paul Stamets '79, his wife, Dusty Yao, and their business, Fungi Perfecti, created a new scholarship in the name of faculty emeritus Mike Beug, the professor who helped shape Stamets' career as a mycologist. The Mike Beug Scholarship is offered to students with financial need who demonstrate a passion for mycology.

"It's important to continue Mike's legacy," Stamets says, "he pioneered mycology studies in the seventies and I was one of his very first students. Mike has a tremendous ability to inspire students. He can educate without seeming superior, he has a humility about him that's very endearing, and he's a very kind soul—that really shows in his teaching style.

"That's why Dusty and I helped support this scholarship with Mike's name on it. Following the mycelial path from the past into the future is very important. Additionally, I was a low-income student so I can relate to not having enough money to follow your dreams. I believe in karma. It's important to pay it forward."

Enter Ryan Richter, a newly enrolled Evergreen student who has a tremendous enthusiasm for mycology, and is the first recipient of the new scholarship.

"I remember the day my mom and I got news of the award. We both started screaming," Richter says. "We felt like this scholarship was meant for me."

Richter's fascination with mycology stemmed from his experience as a high school counselor at a weeklong outdoor school in Oregon. His interest in botany landed him in the "mushroom center," where he taught sixth graders about the mushroom's role in forest and animal decomposition.

Inspired by a fellow counselor who was home-schooled, Richter realized "school doesn't always have to be in the classroom" and began learning everything he could about mushrooms. He joined the Oregon Mycological Society. He devoured everything his local library offered—from books, to articles, to YouTube videos.

photosby Shauna Bittle (Evergreen)

"The library is where I found out about Paul Stamets," Richter says with a grin. "His TED Talks are amazing and I'm currently reading *Mycelium Running: How Mushrooms Can Help Save the World."*

Now, two years and one scholarship later, Richter and Stamets have had a chance to connect in person. The two met on Evergreen's campus and shared laughs, conversations on mushrooms, and a spirit of learning.

"What I really appreciated about Ryan was that he immediately began to express how little he knew of the field, but how vast it was," says Stamets. "I valued that because he recognized 'Oh my gosh, I have a strong interest in the subject but I didn't know it was so expansive.' I think he has an appreciation that there is a deep well of knowledge to dip into."

As part of what could become a ritual for all Mike Beug Scholarship recipients, Stamets gifted Richter a hat with significant meaning—made from

Cont. on p. 3

Upcoming Forays & Other Events

The events page of *The Mycophile* publicizes forays and events of NAMA affiliated clubs which may be of interest to our members. If you would like to list your club's next big event, contact Susan Kayser, Editor: mycophile@namyco.org.
Include date, location, brief description, link for information, and host organization name.

42nd Annual Sam Ristich NEMF Foray
26-29 July, 2018 at State University of NY at Geneseo
http://www.nemf.org/index.html

Telluride Mushroom Festival
16-18 August 2018 in Telluride, CO
https://www.telluridemushroomfest.org

Status of the World's Fungi symposium
13-14 September 2018; Royal Botanic Gardens, Kew, UK
In conjunction with the publication of a cutting-edge annual report, scientists and policymakers will gather at Kew for the first international State of the World's Fungi Symposium. The report provides a review of our current state of knowledge and the major issues affecting fungal diversity and abundance. Also featured in the report are fungal-plant interactions, conservation and uses of fungi, and the fungal tree of life. The two-day symposium brings together plant and fungal scientists, ecologists, conserv-ationists and industry and policy experts from around the world, to discuss issues raised in the report.
www.kew.org/fungi-symposium

18th Annual Gary Lincoff Foray
15 September 2018 | North Park (Pittsburgh, PA)
The Western Pennsylvania Mushroom Club hosts the 18th Annual Gary Lincoff Foray on Saturday, 15 September. Guest Speakers will be Taylor Lockwood, Walt Sturgeon and John Plischke III. For more information, visit:
http://wpamushroomclub.org/lincoff-foray/

Wildacres Regional Foray
27-30 September 2018 near Little Switzerland, NC, just off the Blue Ridge Parkway
http://www.wildacres.org/workshops/septemberevents.html#name

NAMA 2018 Annual Foray
11-14 October, 2018 at Salem, Oregon
The chief mycologist is Dr. Joseph W. Spatafora, Professor in the Department of Botany and Plant Pathology at Oregon State University in Corvallis, Oregon. See p. 3 for more information.

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Registration Open for Salem Foray
by David Rust

Registration for our annual foray is now open! Please join us for a celebration of Oregon mycologists, Oregon mushrooms and Oregon hospitality, from October 11–14, 2018, at the Macleay Conference Center in Salem, Oregon.

We will be lodging at the Macleay Conference Center just east of downtown Salem. The center has no hills, very few stairs, lots of parking, well-lit sidewalks, and air-conditioning. We will have access to a game room, his and her saunas and a pool for a quick, crisp dip. For those of you who may not wish to share a bathroom, there are many motels located within a 15 minute drive of the Conference Center. NAMA has arranged a group rate at a local motel for $89 a night:

Best Western-Pacific Highway Inn
4646 Portland Road NE
Salem, OR 97305
503-390-3200

You must call the motel directly to receive this rate. Don't book online or call the 800 number. Ask for the NAMA Group Rate, good for Thursday October 11–Sunday, October 14. For those of you arriving early, it is also good for Wednesday night. If you have any problems or questions, ask for the manager, Nicole.

Just a little over an hour drive from the Portland International Airport (PDX), Salem is also easily accessible from Eugene and Corvallis. Convenient to the Pacific Coast and the Cascade Mountain Range, there are lots of activities before or after the foray: touring some of the many local wineries, sampling local restaurants and brewpubs and visiting Silver Falls State Park. (We will be doing some half-day forays within the park property, but not near the actual spectacular falls.) The 33rd annual mushroom gathering at Breitenbush Hot Springs will be held the following weekend; consider sticking around another week!

Our foray mycologist will be Dr. Joseph Spatafora, former president of the Mycological Society of America, and recently appointed to Department Head for Botany and Plant Pathology at Oregon State University, Corvallis, Oregon. During his 23 years at Oregon State University, he has maintained an active and successful record of teaching, research and service, which was recognized by his selection as one of OSU's Distinguished Professors in 2018. His research, focused on the evolutionary biology of fungi, is recognized internationally.

To learn more and register, please follow this link.

Scholarship, cont.

Cont. from p. 1

the Amadou mushroom and handcrafted in a village in Transylvania.

This mushroom is one that Stamets describes as holding "threads of knowledge" because it links the ancient past, present, and future. Amadou was first used more than 5,000 years ago and has played an important role in human survival and evolution—it could start and carry fires, it revolutionized warfare, it creates a felt-like fabric, and can be used to smoke bees to calm them. Stamets recently received patents on the Amadou for discovering that the extracts from the mycelium of this species helps significantly reduce viruses in bees and more than doubles their lifespan.

"This is the perfect example of just one species of mushroom with a multiplicity of benefits," he says. "This keystone species that nature provides us is so beneficial in so many ways. It's the proverbial tip of the iceberg."

Equipped with the Mike Beug Scholarship, a hunger for learning the vast world of mushrooms, and a cool new hat, Richter is excited to be a Greener. His dad Reid Richter '84 is an alumnus, and he has a few friends who are already enrolled and working toward their Evergreen degree.

"I'm interested in a liberal arts education and I know what I like," says Ryan. "I enjoy working with my hands—gardening, mycology, bike repair—Evergreen has all of that and then some."

Ryan will begin his freshman year in fall 2018 and is registered for the program *Intro to Environmental Science*. He also looks forward to joining the iconic Evergreen program, *The Fungal Kingdom*.

North American Mycoflora Project
Awards to NAMA-Affiliated Projects

The North American Mycoflora Project, Inc., created a Mycoflora Fund to subsidize sequencing by amateurs. It was launched with $20,000 from MSA and a gift of $10,000 from Paul Stamets and Dusty Yao made through the North American Mycological Association (NAMA). In May the Mycoflora Citizen Science Committee made the first sequencing awards to 35 projects, 18 of which were sponsored by NAMA-affiliated clubs. These initial awards fund the sequencing of 30 fungal specimens for each project, with funds distributed directly to sequencing labs rather than to participants. The results from these citizen science-based sequencing efforts will form the initial backbone of the North American mycoflora dataset.

The next application deadline for sequencing awards is September 15, 2018. All NAMA-affiliated clubs are welcome to register a local mycoflora project and apply for grants with the North American Mycoflora Project. More information on the application process can be found at www.mycoflora.org/participate/apply-for-funding.

Spring 2018 DNA Sequencing Award Recipients

Project Name	NAMA-Affilitated Club	Project Lead
Amanitas of Northeast Pennsylvania	Wyoming Valley Mushroom Club	David Wasilewski
Corticioid Fungi of Wisconsin	Madison Mycological Society	Alden Dirks
Cumberland Plateau TN Mycoflora	Cumberland Mycological Society	Steve Roberts
Fungi of NYC	New York Mycological Society	Mical Moser
Humboldt Bay Mycoflora Project	Humboldt Bay Mycological	Joann Olson
Hygrophoraceae of Lower Puget	South Sound Mushroom Club	Steve Nest
Iowa Mycoflora Project	Prairie States Mushroom Club	Sarah DeLong-Duhon
Macrofungi of Lane County OR	Cascade Mycological Society	Bitty Roy
Mycoflora of Chicago Region	Illinois Mycological Association	Patrick Leacock, PhD
Mycoflora of Florida	FALALFEL	Arthur C. Grupe, Sarah Prentice
Mycoflora of Greater Rochester NY	Rochester Area Mycological Association	Charles Wuertzer
Mycoflora of Indiana	Hoosier Mushroom Society	Stephen Russell
Mycoflora of Long Island NY	Long Island Mycological Club	Joel Horman
Mycoflora of Western Amanitas	Bay Area Mycological Society	Debbie Viess
Northeast Georgia Mycoflora Project	Mushroom Club of Georgia	Bill Sheehan
Olympic Polypores	South Sound Mushroom Club	Regina Johnson
South Sound Mycoflora ProjectWA	South Sound Mushroom Club	Ellen King Rice
WIsconsin Mycoflora Project	Madison Mycological Society	Isabelle George, Alden Dirks

NAMA Shares Work on Fungi - Biodiversity Heritage Library
by Elizabeth Meyer

"Birds, flowers, insects, stones delight the observant. Why not toadstools? A tramp after them is absorbing, study of them interesting, and eating of them health-giving and supremely satisfying."—Charles McIlvaine (1840-1909), mycologist

The North American Mycological Association (NAMA) could be described as a mutualism between citizen scientists and academics who share dedication to the study of fungi. Founded in 1967, the organization of volunteers collaborates with professional mycologists from academic centers. With over 80 affiliated clubs and 1,700 members in the United States, Canada and Mexico, NAMA's initiatives cover a lot of ground.

"We explore all aspects of fungi, including edibility, toxins, dying fabric, cultivation, using mushrooms to support the environment, potential medicinal applications, and photography," says NAMA President David Rust. "This working relationship between amateur volunteers and professionals helped self-taught mycologists like Gary Lincoff (author of National Audubon Society Field Guide to North American Mushrooms} to learn and document developments in the field before such information sharing became routine on the Internet."

In that spirit of collaboration and open access, NAMA licensed its journal *McIlvainea* (named for mycologist Charles McIlvaine of the epigraph) and newsletter *The Mycophile* to the Biodiversity Heritage Library (BHL) as a part of the Expanding Access to Biodiversity Literature project, funded by the Institute of Museum and Library Services. NAMA made digital copies of its publications available to project staff members and volunteers at The New York Botanical Garden for uploading into BHL. (*The Mycophile* is currently available on BHL, with *McIlvaninea* upcoming.)

"*The Mycophile* is our bi-monthly report on developments in the field of mycology, in particular amateur mycology; book reviews; club activities; and the accomplishments of our affiliated clubs," Rust explains. "The newsletter reports on our annual foray, a gathering of approximately 350 mushroom enthusiasts where we collect, document, and voucher specimens of all types of fungi found at that location.

Mycroporus affinis, photo by Robert Gergulics. *The Mycophile*, v. 57, no. 6. 2017.

These fungi end up in The Field Museum of Chicago and are entered into a database which is now available to the public on their website. NAMA has over 20 years of mushrooms and data available to researchers at The Field. In *McIlvainea*, we publish an annual report on mushroom poisonings around North America, gleaned from poison control centers and incidents reported by our network of 150 emergency mushroom identifiers. We also publish articles by renowned mycologists on current taxonomic developments and new research."

"Our newest initiative, the North American Mycoflora Project, will provide a look at all fungi on the continent which have not been properly classified or named," continues Rust. "It would provide online keys and downloadable applications, up to date distribution maps, links to

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Wool dyed with *Cortinarius semisanguineus*, photo by Noah M. Siegel. *The Mycophile*, v. 49, no. 2. 2008

NAMA Shares Work, cont.

Cont. from p. 4

macroscopic and microscopic images, and links to nucleotide sequences and phylogenetic trees." As well as sharing more recent initiatives, these publications have value as records of past mycological study. In 'Mycology Meets History: The NAMA Archive', a 2008 *The Mycophile* article, David W. Rose elaborates on the value of the organization's record keeping:

"In the case of the NAMA records, there is, for example, a file of documents on every annual foray complete with programs, board agendas and meeting minutes, mushroom collection lists, participants lists, and photographs; and this detailed abundance is a testament to an organization that takes science, history and its educational mission very seriously."

This article also closes with a punchline on the dangers of mycological work that is just too good not to share: "The moral about 'history lost' bears repeating, in an anecdote that should have special resonance for mycologists. One huge collection that I processed in my archival work at the New York Botanical Garden was the William Jacob Robbins Papers. Robbins was a plant physiologist and Director of the Garden from 1938-1958, and though he is scarcely remembered for his mycology, he conducted a lengthy series of chemical assays of many species of fungi in the 1950s in the attempt to determine potential sources of antibiotics. […] his laboratory notebooks were extensive, and I organized and catalogued them all. All his notebooks were clear labeled by genus or by species […] Most were in good condition, some were in bad shape. The final lab notebook in the series was labeled 'Various Molds,' and it had been damaged, unfortunately: completely covered by —you guessed it—various molds."

Small white fungus *Christiansenia mycetophila* parasitizes *Collybia dryophila*.
photo by David Work, *The Mycophile*, v. 47, no. 4. 2006

Schizophyllum commune, photo by Mark Bower.
The Mycophile, v. 57, no. 6. 2017.

Fungi: A Very Short Introduction—Book Review
by Steve Trudell

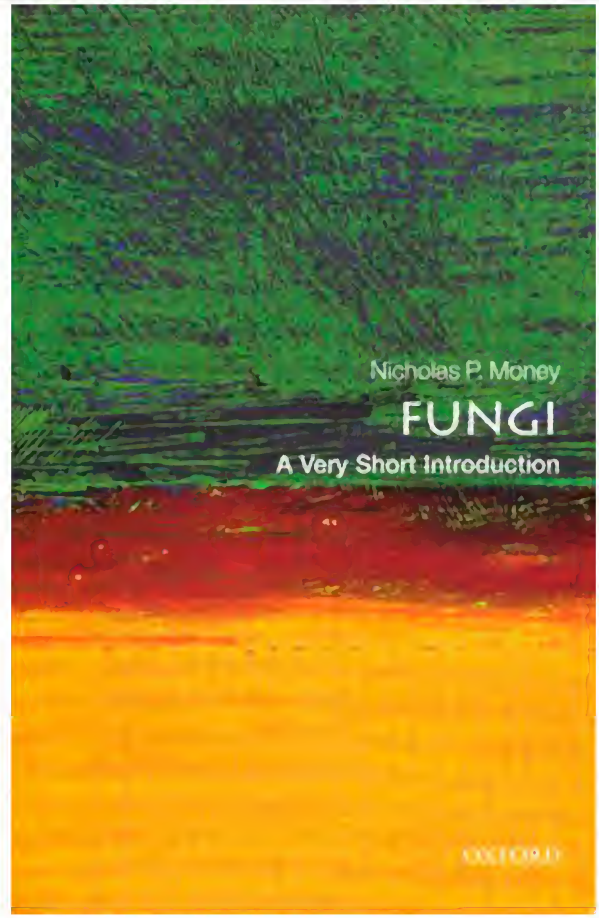
Fungi: A Very Short Introduction
Nicholas P. Money
2016, Oxford University Press (www.oup.com/us)
ISBN 978-0-19-968878-4 (paper, xvii + 137 pp)
$11.95

I was introduced to fungi at UC Davis, more decades ago than I care to admit, by Dr. Kenneth Wells. I had changed my grad school direction from geology to botany and, having no biology degree, had to take a "remedial" course that included 5 weeks about the fungi. To say it was an eye-opener would be a serious understatement. I was hooked by the fascinating biology of these organisms that I had hardly known existed. When Dr. Wells let me attend a multi-university mushroom field trip the following fall, I was blown away by their shapes and colors and impressed by the seemingly endless knowledge and enthusiasm of Dr. Harry Thiers of San Francisco State University. Fungi, particularly those that form mushrooms, have been an important part of my life ever since.

Unlike my experience, most North American mushroom hunters trace their interest in fungi to the fact that many mushrooms are edible and considered to be quite tasty. Mycophagy is well and good but, if that's the only reason a person is interested in fungi, then (s)he is missing out on a lot. Unfortunately few folks have access to university mycology classes, and the textbooks typically used in these classes are both expensive and not easily approachable by those witout some basic biology and chemistry background. So I was pleased to discover this small (about 7 × 4.25") inexpensive book that provides a primer on the biology and ecology of fungi.

This is the 455th *Very Short Introduction*. The series began in 1995 with *Classics* and includes such titles as *Logic, Darwin, Quantum Theory, Global Catastrophes, Chaos, The Devil, Tibetan Buddhism, Teeth, and Hermeneutics.*

Nicholas (Nik) Money, a transplanted Brit, is Professor of Biology at Miami University (Ohio) and probably is familiar to many as the author of several previous books about fungi, including *Mr. Bloomfield's Orchard: The Mysterious World of Mushrooms, Molds, and Mycologists* (reviewed in *The Mycophile* May-June 2003), *Carpet Monsters and Killer Spores: A Natural History of Toxic Mold* (*The Mycophile* March-April 2005), *The Triumph of the Fungi: A Rotten History* (*The Mycophile* March-April 2007), and, with co-authors Lynne Boddy and Sarah Watkinson, a textbook, *The Fungi,* 3rd ed. His research has included topics such as the force with which spores are shot off gills and the mechanics of "egg" ejection from birds' nest fungi, and he has written provocatively about whether we should continue to give fungi names and whether fungi should be considered to be medicinal.



Although there are only 125 pages of text, the basics of fungal biology and ecology are well covered. The chapter and sub-chapter topics are: What is a fungus? (Defining the fungi, Genetics and evolutionary origins, The fungal cell, and Fungal ecology.) Fungal diversity (The range of fungal complexity, Classifying fungi, Mushrooms and related fungi, and Ascomycetes and other groups). Fungal genetics and life cycles (Genomes,

Cont. on p. 8

Nominating Committee Call for Candidates from Connie Durnan

Hello Mycophiles! We need your help. Here's a chance to play an important role in the future of our organization--planning its forays, shaping its projects, making it fun. Nominate yourself or another member for President or First Vice President. This is David's last term and we need to find a new NAMA President. In addition, we need to fill the position of Vice President, and four Regional Trustees. All of these positions are three year terms.

The President leads the Executive Committee and runs meetings of the Board of Trustees. The President appoints committee chairs and works with all committees to further NAMA's mission. The President is NAMA's liaison with other organizations and the media, and is responsible for ensuring, along with the Executive Secretary and the Executive Committee, that the day to day business of NAMA runs smoothly between Board meetings. This position can take anywhere from 5-15 hours per week.

The Vice President is a key position on the Executive Committee. The VP steps in in case of absence of the President. The VP may be called upon to chair the Nominating Committee, and coordinates activities with the Regional Trustees.

Also up for re-election are the following four Regional Trustees: Northeast, Mid Atlantic, Pacific North, and Southwest. Regional Trustees promote NAMA with clubs in their region and communicate important developments.

Elections take place in October. If you are interested or would like to nominate someone, please contact Connie Durnan, by email conniedurnan@gmail.com, or by phone 202-669-5740.

Book Review, cont.

Cont. from p. 7

Yeast, Filamentous fungi, and Aquatic fungi). Fungal mutualisms (Symbiosis, Mutualisms with insects, Mutualisms with plants: mycorrhizas and endophytes, and Lichens). Fungi as parasites of plants (Global impact, Rusts, Smuts, Ascomycetes and other plant pathogens, and Fungicides). Fungi and decomposition (Fungi and the carbon cycle, Coprophilous fungi, Leaf decay, Wood decomposition, Indoor fungi, food spoilage, and decomposition of manufactured products, and Global significance of saprotrophic fungi). Fungi in animal health and disease (Our microbiome, Skin and hair, *Candida* and opportunistic infections, Other systemic infections, Infections of other animals, and Allergens, hallucinogens, and poisons). Edible mushrooms and fungal biotechnology (Picking wild mushrooms, Mushroom cultivation, Medicinal mushrooms and antibiotics, Brewing and baking, and Bioethanol and bioremediation). The book concludes with short lists for further reading and an index.

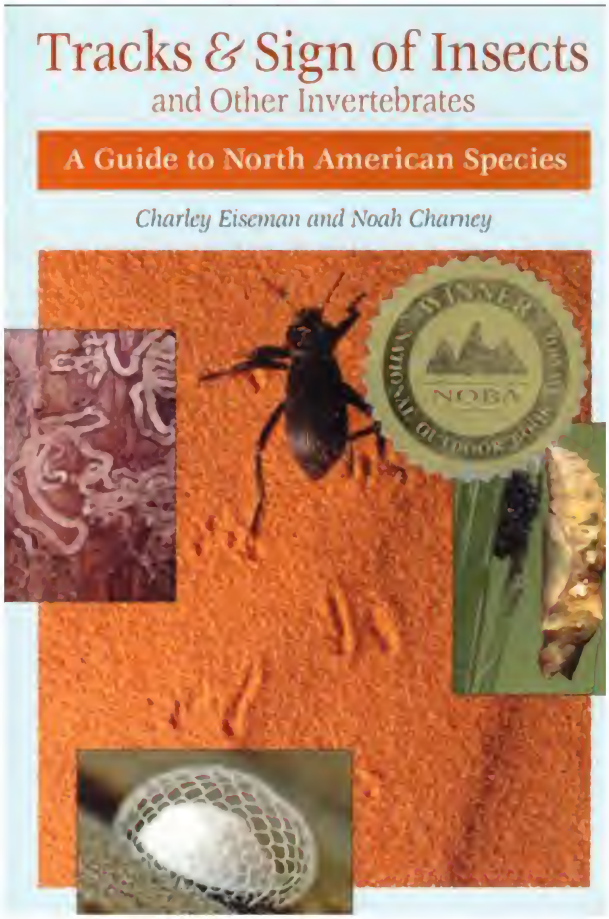
Money's writing strikes a good balance—he doesn't use a lot of technical jargon but also avoids dumbing things down. Incorporation of many bits of mycological history adds interest and suggests avenues for further reading but, unfortunately, citation details for historical works are not provided. The illustrations, mostly line drawings plus a few photographs, are all black and white. Most are effective and many were taken from historical sources such as the Tulasne brothers drawing of an ant infected by *Ophiocordyceps unilateralis*.

The fungal lifestyle has been extremely successful for hundreds of millions of years and, in Money's concluding words, "Fungi are everywhere, and will outlive us by an eternity." His *Very Short Introduction* provides a fine, albeit brief, look at why this is so. Highly recommended.

Tracks & Sign of Insects and Other Invertebrates

by Charley Eiseman and Noah Charney (Stackpole Books, 2010)
Book Review by John Dawson, Keystone Cap newsletter, Summer 2018

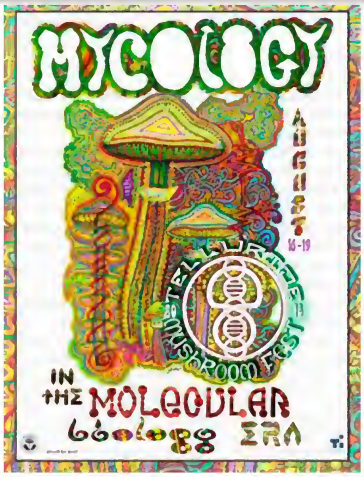
This is a unique and useful paperback guide to what are not fungi but might be mistaken for them. Its very broad coverage includes insect eggs and egg cases, webs and cocoons, droppings and secretions, feeding signs, tracks and trails, shelters, coverings and burrows, galls and leaf mines. So if you're not sure whether spots on leaves are due to rusts, smuts, powdery mildews or some non-fungal agents, or if you've mistaken a plant gall for a tumbling puffball or insect frass or some gelatinous mass for a fungus or slime mold, this book may help you decide. It covers the tracks and sign of some 2000 species and includes nearly 1000 color photos. There are 524 pages of very well-written text, plus a list of plants mentioned in the book, a glossary, a detailed index, and an extensive list of references. One chapter is devoted to sign on algae, fungi and plants, and another to sign on twigs, stems, and stemlike structures. The book has a waterproof cover, is only slightly larger than Lincoff's *National Audubon Society Guide to Fungi*, and is available new from Amazon for $30.36 or used from other suppliers for $24.00 and up. It is a delightful volume just to browse through, and doing so will certainly broaden your awareness of many often- overlooked aspects of natural history and may also add a word to your vocabulary: ichnology, the scientific study of tracks and traces.



Telluride Mushroom Festival

The Telluride Mushroom Festival will take place 15-19 August 2018 in Telluride, CO. The Schedule begins with a full day mushroom cultivation workshop as well as other events. The festival officially opens the following day with some talks in the morning, a tie dye workshop in the afternoon, and a movie, "Fantastic Fungi", after dinner. On Friday, 17 August, there's a full day foray but lots of other events during the day, including a cooking session with Eugenia Bone. Saturday has lectures, edible mushroom forays, the Parade, and award presentations and talks after dinner. The last day offers a few more talks and book signings, and ends mid-day.

You can get tickets via Eventbrite through 2018 Telluride Mushroom Festival Tickets, Thu, 16/08/2018. The full Festival pass is $300, fully refundable before 15 July.



The Secrets of the "Humongous Fungus"
by Sarah Zhang, from The Atlantic,Oct.20,'17

Twenty-five years ago, James Anderson discovered a fungus that expanded the possibilities of life on Earth. It was a single fungus of the genus Armillaria, weighing an estimated 22,000 pounds and spread over a remarkable 15 hectares. The organism had been growing for around 1,500 years, more than a millennium before the land under which it grew even became the state of Michigan. When Anderson and his collab-orators wrote it up in Nature, they suggested it was "among the largest and oldest living organisms" in the world.

This suggestion, in its use of superlative, set off a competition—naturally. Scientists all over the world were soon hunting for Armillaria, or honey mushrooms, in their own forests. The title of the largest fungus in the world eventually went to one in the Malheur National Forest in Oregon: nearly 1,000 hectares big, as many as 8,650 years old. This "humongous fungus,",as it's sometimes called, is by some counts still the largest living organism ever found.

Fungi normally grow as mycelia—soft, white, cottony tufts that you may have seen on food kept in the fridge too long. Some of them also form mushrooms. But Armillaria, somewhat uniquely, can also grow thick, black, rootlike rhizomorphs whose networks can extend miles through the soil in search of wood to eat. The rhizomorphs, scientists think, are what allow a single Armillaria organism to get so big. A comprehensive new genetic study takes up the question of how Armillaria got its rhizomorphs.

"Ever since I since I was a graduate student, I wanted to do exactly the study that was just published," says Anderson, who is now a professor of biology at the University of Toronto. Anderson contributed a couple of genomes for the study, but the bulk of the research and analysis was done by György Sipos and László Nagy, of the University of Sopron and the Hungarian Academy of Sciences, respectively.

Sipos and Nagy not only sequenced four species of Armillaria, but they also pinpointed genes active in the fungus's rhizomorphs and mushrooms. To identify those genes, they had

Armillaria mellea on a living tree.
Photo: Virag Tomity

to figure out how to grow at least one species of Armillaria in a lab. The rhizomorphs were the easy part. Once Armillaria took to their growing medium of rice, sawdust, tomato, and orange—"this fungus has really weird tastes," notes Nagy—they spontaneously formed rhizomorphs. The mushrooms were much trickier.

Rhizomorphs of *Armillaria mellea* (Lairich Rig) (Lairich Rig)

They had to trick the fungus into thinking it was autumn, which they did by moving their fungi to colder temperatures with progressively less light in Nagy's lab. Sipos says his colleagues " did a really excellent job. It used to be be difficult to make this

continued on p. 11

HUMONGOUS FUNGUS, CONTINUED

Continued from p. 10

fungus produce the mushroom." They succeeded in getting one species—*Armillaria ostoyae*, also the species of the giant Oregon fungus—to produce mushrooms.

All that trouble paid off though. When the team got the sequencing data back, they noticed that the same networks of genes appear to be active in both the fungus's rhiz-omorphs and its mushrooms. It suggests one potential evolutionary origin for rhizomorphs in this genus: Armillaria could have gained its rhizomorphs—and consequently its ability to spread so wide—by co-opting genes originally used to grow mushrooms. Nagy speculates the rhizomorphs may be akin to mushroom stems that failed to sprout and grow a cap, instead growing long and thin underground.

The rise of Armillaria has come at the expense of trees. The fungus actually grows into trees and spread under the bark. At first they digest living wood and when they've done enough damage, they continue to feast on the dead wood. "You can basically see entire hills wiped out, entire forests wiped out," says Nagy. You can't see much of the humongous fungus in the Malheur Forest in Oregon since the Armillaria is mostly underground, but you can see all the trees it has killed.

Armillaria as a genus is not a particularly picky eater either, and it attacks all sorts of plants. Understanding how the fungus spreads could impact many agricultural industries. For example, Kendra Baumgartner, a plant pathologist at the U.S. Department of Agriculture, studies Armillaria that specifically attack California vineyards. She was ecstatic to see the new study, which also catalogues the genomes, proteins, and active genes in Armillaria. "They generated an incredible amount of data," she says. When we spoke last week, she told me she had the article's official publication date marked on her calendar, so she could start digging through the data as soon as it's out.

This fall, Anderson went back to the Michigan fungus whose discovery he first reported in the 1990s. He is also sequencing this fungus now—specifically, different parts of the same fungus—in hopes of understanding how it has mutated over its 1,500 years of life. DNA-sequencing technology has come a long way in 25 years.

But there is another thing Anderson told me he wishes he could do that he knows he never will. For all the estimates of how big Armillaria can grow, no one has really seen it in full. "I wish all of the substrate"—the soil and matter the fungus grows in—"would be transparent for five minutes, so I could see where it is and what it's doing. We would learn so much from a five-minute glimpse."

commons.wikimedia.org/wiki/File:Armillaria_mellea_2011_G1.jpg

There is another article on *A. ostoyae*, the giant mushroom, in the ABC news website, about the specimen in the Malheur National Forest in Oregon. It stretches 3.5 mile across and extends an average of three feet into the ground. Its age is estimated in this article at 2400 years.

Giant Mushroom Largest Living Organism

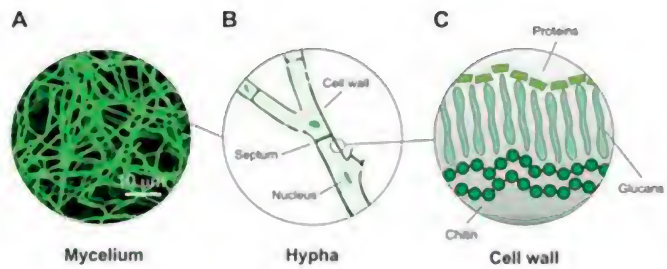
MYCELIUM FOR FASHION

by Xiili Bassett, Plant Chicago Research Fellow

What if, instead of trying on clothes, the garment tried us on? What if materials grew to cover the exact contours of our body? What if our use of the garment led to new growths, outcroppings, and fruiting bodies, rather than holes or tears? Or, what if the hole or tear triggered a new growth? What if our bodies' chemistry was changed through our relationship with our garments? What if the body didn't end at the skin? What if it didn't stop there, and future becomings became possible through the relationship of skin and garment? What if we started designing each other?

And, what if we already have everything we need to begin?

These are some of the questions opened up by a relationship with mycelium. Mycelium is the fungal network, the (mostly unseen) vegetative part of the fungus colony. Mycelium digests, delivers nutrients after processing, and provides a wide variety of functions including structural foundation and communication center. (Mushrooms are the fruiting bodies of this network that allow the system to reproduce via spores, and can be thought of like apples—the fruiting bodies of trees.) The rapid, self adhering, and self-assembling growth of branching mycelium results in a dense matrix capable of structural support akin to a root system. These entangled networks of branching fibers are made up of hyphae, threadlike fungal cells elongated into filaments. The hyphae are composed of natural polymers such as chitin, cellulose and proteins. The tips of the hyphae secrete enzymes and use physical pressure to penetrate and externally digest the food sources in the host into an easily absorbed and transported nutrient, like sugar. In so doing, hyphae connect with each other in various repeating configurations. In sum, mycelium is a natural polymeric composite fibrous material.



The rapidly growing, self-assembling, hydrophobic, insulating, mold and fire resistant, non-toxic, compostable, self-binding, tunable and rapidly renewable nature of mycelium makes it stand alone as a manufacturing monarch. Mycelium is also a low-tech, low-energy and relatively inexpensive material to utilize, thus enhancing principles of equity and sustainability in the experimentation process. Included in this end goal is to mimic Phil Ross's closed-loop process for myco-leather. Using waste at every step to create a 100% biodegradable material, it is arguably possible to create an "infinitely renewable technology."

Given these advantages, the past few years have seen a boom in mushroom-based materials, including human scale architecture, furniture/lifestyle installation, textiles and packaging (Tactical Mycelium).

I am investigating material made from pure mycelium, with one of my principal aims being to create the fabric for a runway collection that I hope to put on by year's end. Traditionally, mycelium is grown on a solid carbon-based substrate such as wood chips or cotton. Such mycelium grows through its food source, creating an often bulky, non-homogenous composite end product composed of both substrate and mycelial fiber. My research investigates the result of removing the fungus from its food source at the end of growth, so that it is entirely made up of itself. Although the results are unknown, my hunch is that a new type of textile—one that is supple, silky and soft to the skin—will emerge. With this textile, I will create a runway collection, utilizing the help of 3D printers and many of my friends. Furthermore, mycelium can be grown with the addition of algal dyes. This process incorporates color into the fiber as it grows, rather than adhering it to its surface.

The essential research process for this study is as follows: 1) Grow up mycelium on petri dish; 2) Create a liquid culture; 3) Grow up mycelium in the liquid culture; 4) Harvest and

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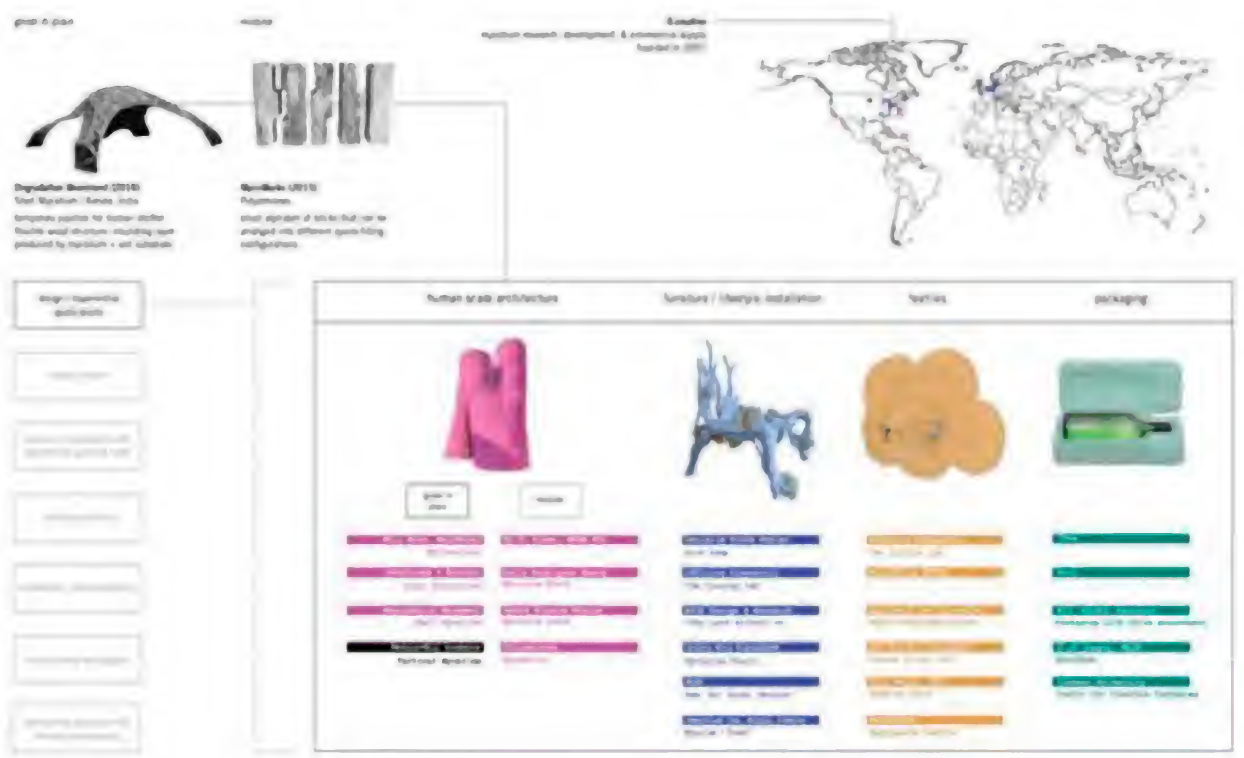
MYCELIUM FOR FASHION, CONT.

Cont. from p. 12



dry/heat treat the resulting mycelial mass; 5) Treat the mass with various combinations of wax/oils to enhance for flexibility; 6) Repeat. A more granular version of my process is available upon request. Within this process, emergent questions include: what if we didn't have to heat-treat and kill the mycelium at the end? How can a self-assembling, living, material be sustained?

To develop my mycelium-based fibrous film, I've chosen Reishi, also known as *Ganoderma lucidum (G. lucidum)*. Reishi is an edible and medicinal fungal that belongings to a group of white rot fungi. Reishi, a polypore, is traditionally is grown on wood such that the mycelium of this fungi are incredibly dense, complex and forceful. As the New Yorker details, "These hyphae can knit molded piece of substrate solidly together; in general, a single cubic inch of substrate contains eight miles of mycelium." Once Reishi mycelium is grown up on a plate, strands of hyphae from the live mycelium can be taken and, like plant cuttings, they will continue to grow in a new place under proper conditions.

Further research questions include: which complex shapes and what level of detail is possible in the material? Which processes, besides growing in a tray, can be used to form the material? How viable is it to create a supportive structure solely out of mycelium, without other support material? How long will it take to make a strong material from mycelium?

In the end, each of these quandaries results from the fundamental question guiding my research: what does mycelium want to be? Stay tuned to find out.

A slide show on Tactical Mycelium can be seen at: Tactical Mycelium by Bridget Ayers Looby

RHODOCYBE TUGRULII: FIRST NORTH AMERICAN RECORD

by Joel Horman, LI Sporeprint, Spring 2018 issue of the Long Island Myco. Club

Among the pink-spored Entolomataceae, *Rhodocybe* is distinguished by spores that in end view have 6-12 facets, the surface irregularly ornamented by pustules; and by a lack of clamp connections. It is a small genus, with only 168 species (the present one included) listed in Mycobank, with a similar number in Index Fungorum if one discounts the recent controversial revisions that have allotted many to other genera, particularly *Clitopilus*. With so few species, the majority of serious collectors are unfamiliar with this genus, which has few distinctive macrocharacters. Moreover, in contrast to other members of the Entolomataceae, the sporeprint color may be grayish or white.

The present collection was found on Aug. 12, 2017 by the author's wife Margaret, in an undisturbed pine barrens habitat in Riverhead, Long Island, NY in association with *Pinus rigida*. Initially their identification as to genus was problematical due to this lack of unique macrocharacters, and a sparse spore production (not productive of a sporeprint), with characteristics such as sporal cyanophily attributable to several different genera. Therefore, DNA sequencing was undertaken, (performed by AlvaLabs of Oviedo, Spain) with the completely surprising result of a 99% match with a recently described species found in Turkey and Estonia: *Rhodocybe tugrulii* Vizzini, Sesli, T.J. Baroni, Antonín & I. Saar 2016.

However, even a 99% "barcode" match is not always probative of specific identity, which requires both macroscopic and microscopic confirmation.

Firstly, to address the sequence data: regions sequenced were small subunit ribosomal RNA gene, partial sequence; internal transcribed spacer 1 and 5.8S ribosomal RNA gene, complete sequence; and internal transcribed spacer 2, partial sequence. The BLAST generated distance tree of results shows our specimen nestled directly below the branch on which the type specimen of *Rhodocybe tugrulii* is located. Interestingly, it is closest to *R. pallidogrisea*, known only from Tasmania.

The physical characteristics are also very similar, indeed striking, photographs of both being essentially indistinguishable. Vizzini *et al.* describe the fruit body as small (10-40 mm.), clitocyboid, the pileus convex, broadly depressed, pale gray to beige, surface slightly pitted or ribbed, dry. margin irregu- lar and incurved; this fits our specimens perfectly (see photos). The gills are concolorous with pileus, "typically decurrent and

Rhodocybe tugrulii en situ

subdistant", with 30-35 full length gills and 2-5 lamellulae. This is readily applicable to our collection, as can be seen in the "studio" photo, except for the gills which were subdecurrent. Our stipes were also concolorous and with mycelial threads and a widened base, but were a bit more robust, measuring 3-7 mm wide compared to 2-5 mm. Sporeprint color was not mentioned for the type, so perhaps none could be obtained, as was the case with our Long Island collection.

Except for spore morphology, there is little microscopically unique to *Rhodocybe*, and bright field microscopy does not lend well itself to distinguish, much less photograph, the pertinent details, which require SEM, scanning electron microscopy to clearly be delineated. Nevertheless, a second look at the spores does uncover congruent characters. They were subglobose to broadly ellipsoid, 4-7 X 4-6 µm, (4.8-7.2 X 4-5.9 in the type) with a prominent apiculus, minutely

Cont. on p. 15

ROHODOCYBE TUGRULII, CONT.

Cont. from p. 14

Rhodocybe tugrulii

angular in polar view, some with a few angles in profile view; occasionally obscurely bumpy. No hymenophoral cystidea seen. Basidia four-spored.

Although the collections in Turkey and Estonia were from mountainous areas as contrasted with our Atlantic coastal plains habitat, all were associated with Pine, gregariously growing in pine duff. This disjunct distribution raises questions as to the origin of the Long Island collection. If physical introduction is considered of low probability, the alternatives are vicariance or long-distance dispersal, a question which in most instances remains incompletely resolved.

Thanks to Vladimir Antonín, Moravian Museum, Dept of Botany, Czech Republic for providing a pdf of the Phytotaxa paper. And special thanks to Tim Baroni, SUNY, Cortland, NY for sharing his expertise and responding so fully to my inquiries.

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Newsletter of the North American Mycological Association
THE MYCOPHILE

Mushroom of the Issue

Cryptoporus volvatus in the Sierra

Cryptoporus volvatus

Cryptoporus volvatus is an interesting and ubiquitous mushroom of the western mountains, found on decaying conifer wood. When young its color is a beautiful varnished fawn, as it ages that color bleaches out. Cryptoporus means hidden pores, and those hidden pores not only help to retain moisture in a xeric environment, but they also provide protective housing for the young of a species of bark beetle. Observe closely and you will see a tiny tunnel in the bottom of that fruit body. Inside that shelter, the beetle lays her eggs; when the larvae hatch, they eat the developing fungal peridium, and when both are fully developed, those newly matured beetles fly away to spread those fungal spores! The ultimate room and board!

To see a larvae-filled interior, go to: http://mushroomobserver.org/image/show_image/84317?obs=44758&q=dMG

Newsletter of the North American Mycological Association

THE MYCOPHILE

Volume 58:5 September-October 2018 www.namyco.org

MyCoPortal Helps Save Life!

by Timothy J. Baroni & Andrew N. Miller

Dr. Tim Baroni, a professor of mycology at SUNY Cortland, received an email request to identify a possible poisonous mushroom from the Upstate New York Poison Center in Syracuse, New York concerning a Rome, New York patient who had recently consumed mushrooms from his lawn and was seriously ill in the autumn of 2017. The initial identification was thought to be *Chlorophyllum molybdites*, commonly known as the green- gilled Lepiota, based on some blurry images of the fungi and what the patient described of the various fungi he had eaten. *C. molybdites* is known to cause severe gastrointestinal symptoms of vomiting and diarrhea for 1-3 hours, but is not known to cause death. It occurs in lawns and other grassy areas in summer and autumn and holds the infamous reputation of being the most commonly consumed poisonous mushroom in North America. Even though the patient was quite ill at the time, the caregivers believed that the worst of the effects of the mushroom toxins would soon subside if it was Chlorophyllum poisoning. Therefore the attending medical staff decided not to treat the patient immediately but did reach out to Dr. Kathie Hodge at Cornell University who is, as is Tim Baroni, on the Poison Control Center call list for possible mushroom poisoning cases. Dr. Hodge was not convinced the blurry images of the partially consumed mushrooms provided enough evidence to confirm the fungus was Chlorophyllum. Luckily for the patient, Kathie decided to confirm the identification with another mushroom expert.

Enter Dr. Baroni, who after examining the blurry images of the half-eaten mushrooms had a suspicion that the cause of this illness was actually the fatal *Amanita virosa* (commonly known as the Destroying Angel) since he was fairly certain that *C. molybdites* does not occur in this upstate area of the Northeastern US. He turned to the Mycology Collections Portal (MyCoPortal) to confirm his initial

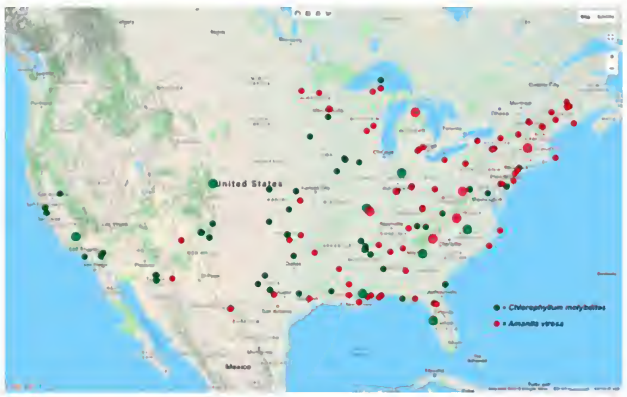

Figure 1. Species distributions for *Chlorophyllum molybdites* (green circles) and *Amanita virosa* (red circles) in the United States.

belief where he was able to map the species distributions for both the non-lethal *Chlorophyllum molybdites* and the deadly *Amanita virosa* (Fig. 1). Based on these readily available data this was clearly not going to turn out well for the patient unless immediate treatment was given! He strongly urged treatment for Amanita poisoning directly to the attending medical staff at Upstate Medical Center in Syracuse, NY. Dr. Baroni requested that fresh samples from the patient's lawn be collected and sent to his laboratory by overnight mail, which the patient's brother did. That next morning Dr. Baroni opened the package to find several species, one of which was *A. virosa*. He immediately contacted the attending medical staff at the hospital to confirm the poisoning was from a deadly mushroom, and was relieved to learn his advice had been heeded the day before and treatment for Amanita poisoning had started already. The life of the patient was saved after several days in Upstate Medical Hospital and then at the Strong Memorial Hospital in Rochester, NY where the patient was transferred to receive further treatment. The patient was very lucky, thanks to Dr. Baroni and the MyCoPortal.

Upcoming Forays & Other Events

The events page of *The Mycophile* publicizes forays and events of NAMA affiliated clubs which may be of interest to our members. If you would like to list your club's next big event, contact Susan Kayser, Editor: mycophile@namyco.org.
Include date, location, brief description, link for information, and host organization name.

Status of the World's Fungi symposium
13-14 September 2018; Royal Botanic Gardens, Kew, UK
Scientists and policymakers will gather at Kew for the first international State of the World's Fungi Symposium. The two-day symposium brings together plant and fungal scientists, ecologists, conservationists, industry and policy experts from around the world, to discuss issues raised in the annual report.
www.kew.org/fungi-symposium

18th Annual Gary Lincoff Foray
15 September 2018 | North Park (Pittsburgh, PA)
The Western Pennsylvania Mushroom Club hosts the 18th Annual Gary Lincoff Foray on Saturday, 15 September. Guest Speakers will be Taylor Lockwood, Walt Sturgeon and John Plischke III. For more, see:
http://wpamushroomclub.org/lincoff-foray/

Wildacres Regional Foray
27-30 September 2018 near Little Switzerland, NC, just off the Blue Ridge Parkway.
http://www.wildacres.org/workshops/septemberevents.html

NAMA 2018 Annual Foray
11-14 October, 2018 at Salem, Oregon
The chief mycologist is Dr. Joseph W. Spatafora, Professor in the Department of Botany and Plant Pathology at Oregon State University in Corvallis, Oregon. See p. 3 for more information.
NAMA 2018 Salem, Oregon Foray - North American Mycological Association

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Do Chaga Mushrooms Have Health Benefits?

by Dr. Ceppie Merry, from https://healthybutsmart.com/chaga-mushroom/

(This article, a review of current studies, is excerpted from Healthy But Smart.com.)

The Chaga mushroom is called the "king of mushrooms," while the better-known reishi mushroom gets the title of "queen of mushrooms." Chaga mushrooms are marketed as having a wide range of medicianal benefits, including anti-inflammatory cancer-treating and -preventative, hepatoprotective, and immuno-modulation effects.

The *Inonotus obliquus* mushroom, also known as Chaga mushroom in Russia and Kabano-anatake in Japan, is essentially a black parasitic white-rot fungus that generally inhabits the living trunks of mature birch trees (Betula app). It grows best in cold climates between 45 and 50 degrees north.

Given the fact that Chaga mushroom extract sells for as much as $130/oz, this mushroom would have to be scientifically proven to do all of the above (and do my ironing) for me to treat it as royalty. There are a total of 54 papers looking at Chaga mushrooms for cancer treatment or prevention. The knowledge base on Chaga mushrooms in cancer can be summarized as follows.

Laboratory-based studies suggest that Chaga mushrooms may exert an anticancer effect in colorectal, lung, and cervical cancer. Laboratory models also suggest that Chaga mushrooms may exert an anticancer effect via four possible mechanisms:

- antioxidation to prevent the development of cancer in the first place
- arresting the growth of tumor cells
- killing tumor cells directly and
- activating the immune system to kill tumor cells.

The anticancer activity of Chaga mushrooms is largely attributed to triterpenoid compounds in the mushroom. Bottom line: There is no human clinical proof at this time that Chaga mushrooms can prevent or treat cancer

There are three studies looking at the antiviral effects of Chaga mushrooms in herpes simplex infections. Bottom line: there are laboratory and animal data supporting an antiherpes role for Chaga mushrooms. However, this has not been validated in humans.

There are several other claims for Chaga: reducing inflammation, aiding the GI tract, helping the immune system,and helping with hairloss and weight loss. Studies in mice indicate some virtue in improving physical endurance.

Conclusion:

Available information on Chaga mushrooms is limited to animal studies (at best). This raises the question of the nature of the correlation between animal and human studies. Are animal models predictive for humans? A comprehensive review of the subject was published by researchers from Wichita State University in 2009 (*Phytochemistry*, Vol 108, Pages 171-176).

The review reports that the predictive power of animal studies is only 10% for drug behavior in humans. We could reasonably expect a similar poor correlation for functional foods. The authors explain that it is not surprising that animals fail to act as "causal analogical models" given ten key differences between humans and animals (genes, gene regulation, gene expression, mutations, proteins, protein-protein interactions, genetic networks, organismal organization, environmental exposure, and evolutionary history).

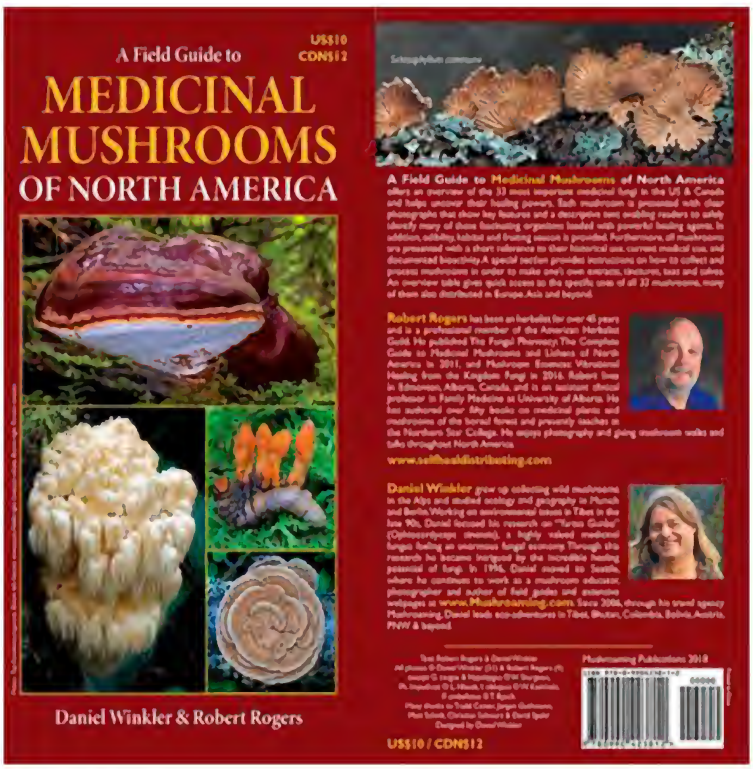
The authors concluded by saying that "when one empirically analyzes animal models using scientific tools, they fall far short of being able to predict human responses."

The current scientific literature does not justify spending a lot of money on Chaga mushrooms. (There are far less expensive sources of vitamin C available.) Neither does it deserve any royal titles. In fact, in the absence of human clinical data, this mushroom should not even have a knighthood.

Book Review: A Field Guide to Medicinal Mushrooms of N. A.
by Dianna Smith

A Field Guide to Medicinal Mushrooms of North America
By Daniel Winkler and Robert Rogers
Mushroaming Publications 2018

Copies can be purchased at www.mushroaming.com. for U.S. residents and for Canadians.at http://www.selfhealdistributing.com/ $10 US, $12 Canadian



This small field guide booklet is an accordion-style folded 8 panel double-sided brochure on good quality heavy-weight paper with a glossy finish. It seems relatively water-resistant. Given that those most interested in consulting this educational work on traditional fungi employed in various folk cultures might take this along with them in a crammed backpack or mushroom basket, it probably could have been a bit sturdier. It is in the same format of three others produced by Daniel Winkler: *Field Guide to Edible Mushrooms of the Pacific Northwest, Field Guide to Edible Mushrooms of California,* and *Field Guide to Tropical Amazon Mushrooms.* (See reviews by Steve Trudell in *the Mycophile* January-February 2012, November-December 2012 and May-June 2015).

The authors are Daniel Winkler and Robert Rogers. Daniel is perhaps most known for his study of the medicinal, social, economic and environmental effects of the ascomycetous club-shaped *Ophiocordyceps sinensis*, a hugely popular parasitic fungus that infects insects. It is found in high altitude locations in Tibet, Nepal and other regions west of and including mountainous areas of China. He has also written numerous articles and books and leads travel expeditions to various locations around the world. Robert Rogers has been an herbalist for some 45 years, author of many popular books and articles on medicinal herbs, lichens and fungi, and assistant clinical professor of Family Medicine at the University of Alberta. Both men regularly lead walks, take excellent photographs and are crowd-pleasing presenters for mushrooming and other naturalist organizations.

The cover panel has the title and four photos of fungi displayed against a dark burgundy background. On opening the booklet, there are five categories addressed on the left panel: an introduction to fungi discussing their substrates, and functional roles in the environment; instructions on correctly identifying specimens, accompanied by the caveat that a number of them are difficult for the novice to correctly ID. They advise on consulting field guides for further in-depth information on properly identifying the included fungi. 'When in doubt, throw it out!' The third section provides a three-part visual symbol indicating the ease of identification of each fungus depicted:

1. A black and white symbol of the brochure means that fungi displayed with this emblem are relatively easy to identify.

2. Moderately difficult to ID fungi have been assigned a logo containing couple of stacked field guides.

3. The third figure features 3 stacked books seen through a large magnifying glass for challenging fungi that have several lookalikes, some of which might be toxic.

Additionally, 2 different edibility symbols are posted with each entry: 'choice edibles' are marked

Cont. on p. 5

Field Guide to Medicinal Mushrooms, cont.

Cont. from p. 4

with 2 forks displayed within a circle and 'good edibles' are marked by a circle containing just one fork. There are also a few brief general remarks on fruiting seasons of various fungi and on the variability in their respective sizes depending on conditions and the age of specimens.

The second facing page includes a quick and easy guide to preparing your own medicinals, for making tinctures, teas, salves and creams, as well as daily dosage recommendations. It ends with a cautionary statement about consulting the advice and guidance of an expert, and not relying solely on the photos in the brochure-booklet to confirm the identification of fungi readers may want to try.

The first fungi included are genera within the Polyporales of the Basidiomycota. Above each photo and associated information on the identifying characteristics and traditional or folk medicinal uses of each species discussed is the scientific name and common name printed in white against a dark teal-green horizonal strip. The polypores included are: *Fomes fomentarius, Fomitopsis betulina, Fomitopsis pinicola, Ganoderma tsugae, Ganoderma applanatum, Laetiporus sulphureus, Laricifomes officinalis, Phellinus ignarius, Inonotus obliquis, Trametes betulina, Trametes versicolor, Grifola frondosa, Polyporus umbellatus* and *Sparassis radicata.* Oddly, *Cyathus striatus*, in the Agaricaceae family has been placed in the Polyporales. (Undoubtedly this was an oversight.) The next group to be featured are cap and stem gilled fungi in the Agaricales: *Agaricus subrufescens, Coprinus comatus*, the *Armillaria mellea* group of honey mushrooms, *Flammunlina velutipes, Lentinula edodes, Lyophylum decastes*, the *Pleurotus ostreatus* group of oyster mushrooms, *Hypsizygus* spp., *Psilocybe cubensis* and *Schizophyllum commune.*

Labeled in white against a brownish horizontal bar are *Hericium erinaceus, Hydnum repandum, Phallus impudicus, Auricularia auricula,* and *Tremella mesenterica.* The text accompanying the stinkhorn mistakenly says that *Phallus ravenelii* differs from *P. impudicus* in that the volva is of the former is tinted purple. I believe the species with the purple tinted volva is actually *Phallus hadriani.* Three fungi from the Ascomycota are listed against a blue stripe: *Cordyceps militaris*, species of *Morchella* and of *Xylaria.*

An Excel-like listing of all 33 fungi included in the booklet is on the left side of the next to the last page, and a vertical listing is at the top on the right side indicating 21 of the traditional medicinal effects or uses of fungi. The symbol of a golden mushroom is placed in the spaces adjacent to the alphabetically arranged botanical name of each fungus treated in the booklet indicating the purposes and range of therapeutic effects one might expect as a result of consuming them. The back page gives a concise overview of the purpose of the booklet and biographical information on the authors, Daniel Winkler and Robert Rogers.

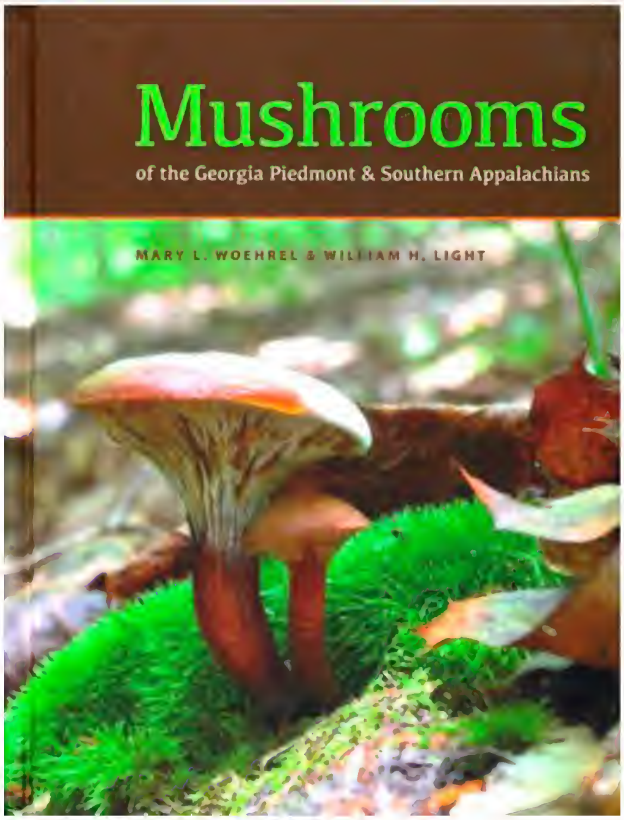
The booklet was designed by Daniel Winkler. NAMA members should be aware of his talents as a photographer, given the many stunning award-winning photos he has submitted for NAMA's annual photography contests. He contributed 51 of the total in the booklet, while Robert Rogers contributed 9. Five other photos were taken by four additional mushroom photographers. Most of the booklet's photographs are well-done, if rather small, but given the size of the booklet, and the need to include identification, medicinal use information, and symbols on identification ease and edibility, the authors addressed these limitations fairly well. A few shots are a bit on the dark-side (particularly the center one of 3 *Ganoderma tsugae* photos, one of 2 shots of *Flammulina velutipes*, and the wood ear fungus). They would have benefited from highlighting the surface textures in a photo editing program.

A Field Guide to Medicinal Mushrooms of North America will appeal to people who believe in the efficacy of medicinal fungi used historically in various cultures, or who at least see no problem experimenting with them for either preventative or curative purposes. Assuming advocates do not overdose on suggested dosages, they are relatively safe to take. Despite the existence of numerous trials to determine their efficacy, so far studies suggest that they may work, but there are no published evidence-based trials to date which prove they do so. As the authors say, do your homework.

Dianna Smith
Chair of NAMA's Medicinal Mushroom Committee

Book Review: Mushrooms of the Georgia Piedmont & S. Appalachians
by Steve Trudell

Mushrooms of the Georgia Piedmont and Southern Appalachians: A Reference
Mary L. Woehrel and William H. Light
2017; University of Georgia Press (www.ugapress.org)
978-0-8203-5003-5 (Hardcover: 8.5 × 11", 664 pp)
$59.95



Although the Preface states that "This book is intended to be a field-durable guide to the wild mushrooms of Georgia…", I doubt whether many persons would take this hefty tome into the field. The pages are standard letter size and the hardcover volume tips the scale at just over 6 pounds—a bit much if one also hopes to be carrying a basket full of mushrooms. And the physical weight is matched by the weight of its content (the subtitle, "A Reference" is apropos), so this might not be a guide for everyone. Let's take a look at it. The contents …

The general front matter includes the Preface (Scientific Synonyms, The Geographic Area of This Book, Other Useful Guides) and Acknowledgments. The Introduction follows, and a rather long one it is (Three Domains and Six Kingdoms: Is That All? So What Are Fungi Anyway? Who's Who among the Fungi, Fungi: An Overview, Mating Types and Sexuality, Division/Phylum Basidiomycota [Club Fungi and Mushrooms], Division Ascomycota [Yeasts and Sac Fungi], Zygomycetous Fungi [Pin Molds, Bread Molds, and Other Zygospore-Forming Fungi], Division Chytridiomycota [Chytrids], Mycorrhizae [Division Glomeromycota (arbuscular mycorrhizae), Ectomycorrhizal Fungi, Mycoheterotrophic Plants], Carnivorous Fungi, Endoparasitic Fungi, Fungus-Gardening Beetles and Ants, Mycetozoa / Myxomycota (Slime Molds), Lichens, Mushroom Toxins and Mushroom Poisoning, Medicinal Properties of Some Southeastern Mushrooms, Collecting and Identifying Mushrooms [What's Needed, Chemical Staining, Microscopy], Scientific Nomenclature, References Cited), and Mushroom Morphology: A Brief Pictorial Primer; altogether 54 pages in a small font.

Although the next section is titled "Dichotomous and Pictorial Keys to the Major Mushroom Forms," there's only one key, a dichotomous one. Three pages of numbered thumbnail-size images follow. They were chosen well, effectively illustrate particular features, and are cited in the key; however, they do not constitute a key by themselves. Given that half of the couplets in the text key include a second lead "Fruitbody otherwise," it takes a while to work through and so might have been better to just provide a simple pictorial key to the major morphological groups (gilled mushrooms, boletes, corals, etc.), as many other books have done.

The Species Accounts comprise the bulk of the book (Morels, False Morels, and Elfin Saddles; The Carbonaceous Fungi [Xylariales]; Black Knot; Jelly Fungi; Earth Tongues, Club Fungi, and Coral Fungi; Parasitic Fungi [Arthropod-Parasitizing Fungi, The Insect Destroyers (Order Entomophthorales), Mycoparasitic Fungi, Molds, Hypomyces]; Cup and Disk Fungi; Class Agaricomycetes: An Overview [Puffballs, Earthstars, Truffles, False Truffles, and Deer Truffles; Stinkhorns and Stinky Squids (Order Phallales, Family Phallaceae); The Boletes (Old Man of the Woods, Other Boletes); Inky Caps (Coprinoid Mushrooms); The Amanitas (Order Agaricales, Family Amanitaceae); The Lepiotas (Order Agaricales, Family Agaricaceae); Stropharia-Like Mushrooms (Order Agaricales, Family

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Mushrooms of the Georgia Piedmont..., cont.

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Strophariaceae); The Corts (Webcaps, Order Agaricales, Family Cortinariaceae, Genus Cortinarius); The Rooted Collybia Complex; Oyster-Like (Pleurotoid) Mushrooms; Miscellaneous Euagarics (The Magic Mushrooms [Psilocybe and Panaeolus], Brown Look-Alikes—Some Edible, Some Deadly Poisonous); The Russulas and Milkcaps (Russulas, Milkcaps); Chanterelles; Corticioid Fungi (Crusts, Spreads, and Parchment Fungi); Polypores (Shelf and Bracket Fungi); Hydnoid (Toothed) Fungi; Bird's Nest Fungi and Artillery Fungi; Slime Molds (Mycetozoa / Myxomycota)].

Although most of these categories are typical ones, a few, such as "Brown Look-Alikes—Some Edible, Some Deadly Poisonous," are unusual. In this case, the mushrooms in the category don't look all that much alike, only one is deadly poisonous, and many of them are not brown. Odd species placements include the cedar-apple rust inexplicably appearing in the Corticioid group.

The book concludes with a Glossary of Some Mycological Terms, Index of Common Names, and Index of Scientific Names.

The Preface contains a number of snarky comments—"Many of the photographs in current guides are 'Hollywood' depictions (although just what this means is not explained) of these fungi that do not show the various forms and color morphs that fungi assume in nature"; "Nomenclatural problems abound in most of these works (referring to other, unnamed, field guides)"; "Specialists often tend to throw their keys together as an afterthought, casting about for features they can fit into a dichotomous-style key without any consideration given to the features' relevance or usefulness." These sorts of comments give the book an uncomfortable tone that carries into many of the nomenclatural comments in the species accounts.

Given that the main purpose of the book is to serve as a tool for identifying mushrooms, the Introduction is much too long and contains far too much detail, much of it not relevant to identifying mushrooms. Although I fully support mushroom hunters learning all they can about the fascinating biology of fungi, there is no need in an identification guide for such things as a lengthy discourse on high-level biological classification (still very much in flux), comparison of the use of commas between the zoological and botanical/mycological nomenclature codes, discussion of form-genera and form-species, or a figure showing zygospore formation (zygomycetes do not produce mushrooms). In most places, "Division" is used for the taxon below Kingdom and above Class. Although formerly used, and still technically allowable, mycologists and botanists now nearly all use "Phylum," to provide consistency with other groups of organisms. However, on the plus side, it's good that the artificial nature of categories and classification in general is emphasized. The pigeonholes exist in our minds, not in nature.

The Introduction also suffers from a much-too-large number of factual errors (mostly involving details), over-generalizations, and misleading statements, and is in need of a comprehensive editing to catch the many repetitive passages, conflicting statements, inconsistent terminology, and miscellaneous goofs such as incorrect unit conversions, misspelled author names, and wrong dates in reference citations. For instance, formally defined taxa do not go out of existence when revised classification schemes cause them to fall out of favor—they just become unused. Not all basidiomycetes have a two-locus, multiple allele mating system. The tetrapolar mating system involves two, not four, DNA loci. *Malus* is the genus of plants that includes apples, it is not the genus of the apple scab fungus. Not all mycoheterotrophic plants are associated with ectomycorrhizal fungi—there are also many associated with arbuscular mycorrhizal fungi. Other examples: In one place "cells of a filament," in another "compartments of a hypha"; "allantoid" here, but "sausage-shaped" there. We are told that certain reportedly medicinal mushrooms are "without apparent adverse side effects", but, a few paragraphs later, that they "could have unwanted side effects or deleterious interactions." Likewise, "Studies on the anticancer effects of Reishi have not been convincing," but then "Several compounds in Reishi were shown to inhibit a variety of human cancers." It is reported correctly that the arbuscular mycorrhizal fungi (members of the Glomeromycota, often incorrectly referred to here as "mycorrhizae") are no longer considered to belong to the Zygomycota (an out-of-favor, more or less trash-can phylum whose disparate members are being transferred to many

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other groups), but later there is mention of zygomycetes being involved in arbuscular mycorrhizas. The Basidiomycota is described as representing 37% of the described species of fungi, and the Ascomycota as representing 75% of described species. That makes 112% without including the Chytridiomycota, Glomeromycota, and zygomycetes. Lichenicolous fungi are those that grow on lichens, they are not the fungi involved in the lichen itself. It is initially stated that the fungi involved in lichens are all ascomycetes, but a later discussion correctly describes the small minority of lichenized fungi that are basidiomycetes.

The species accounts describe and illustrate, by my count, 318 mushroom species and 12 slime molds. Forty-four of the mushroom species are not covered in other books for the Southeast (and somewhat beyond). These numbers are nearly the same as those (321 and 50) for the recent *Southeastern Mushrooms*, by Todd Elliott and Steve Stephenson (reviewed in *The Mycophile*, May-June 2018). Common names are used for the main heading of each account, which I found puzzling, given the authors' emphasis on scientific nomenclature. Most of the names used are familiar or fairly obvious ones, but a few struck me as newly invented and unlikely to be widely used, such as dead man's rubber gloves, cross-veined troop mushroom, and landslide mushroom. The Latin binomial appears below the common name, in a smaller font and, below that, the photographs, typically two or three, arranged in a row. The detailed text includes the full name of the fungus, complete with author name(s) and date and place of publication; sometimes the basionym is given; a breakdown of the higher taxa of which the species is a member—phylum, class, order, family; the derivation of the scientific name; general description of the fruitbody; spore-print color; key microscopic features; occurrence (substrate, habitat, distribution); edibility; and comments.

The species accounts text is the strongest aspect of the book, especially the detailed commentary that gives key features for distinguishing look-alikes and explains misapplied names and other nomenclatural issues. Like the Introduction, the comments sections would have benefited from a careful editing to catch obvious errors, eliminate repetitive information, and generally improve clarity. For instance, in the comments for *Annulohypoxylon multiforme* and *A. cohaerens*, *Daldinia concentrica* is cited as a possible look-alike. However, three pages earlier, it is stated that *D. concentrica* occurs only in Europe (true, as far as is known, but such absolute statements should be avoided) so the look-alike comparison(s) should have been made with the southeastern U.S. species of *Daldinia*, such as *D. childiae*.

Stropharia-Like Mushrooms • 323

Wine-cap Stropharia

Stropharia rugosoannulata

10 µm

A B C D E

Photos and micrograph: A–D, W. Light; E., Ann F. Berger

***Stropharia rugosoannulata* Farlow ex Murrill**, *Mycologia* 1(4):133 (1909)
[Basidiomycota, Agaricomycotina, Agaricomycetes, Agaricomycetidae, Agaricales, Strophariaceae]

Derivation: Stropharia, Greek, from strophos, "belt"; rugoso-annulata, Latin, "wrinkled ring."

Cap: 4–15 cm (1½–6 in) across, initially bell-shaped, becoming broadly convex to flat, dry, smooth, wine-red (Fig. A) or reddish brown, fading to pale tan; margin often with remnant fragments of partial veil (Figs. A, B, & E).

Flesh: Firm, white.

Gills: Attached, close (Figs. D & E), at first pale grey or whitish, becoming purplish-grey (Fig. E) to purplish-black.

Stipe: 5–15 cm tall by 1–3 cm thick (2–6 × ½–1¼ in), base expanded, bulbous (Figs. A & B), with white mycelial threads (Figs. A & B, black arrow) smooth to fibrous, white, staining yellowish with age (Fig. B), with thick, typically persistent split and tattered ring (Fig. A, arrow; Fig. E).

Spore print: Dark purple-brown to blackish.

Chemical staining: Cap surface olive-green with KOH.

Microscopic: Spores 10–14 × 7.5–9 µm, elliptical, smooth, with apical pore; chrysocystidia present on gills that stain yellowish in KOH; vegetative hyphae producing abundant, large, stellate (star shaped), spiked cells (acanthocytes) (Fig. C), this feature characterizing the genus *Stropharia*.

Occurrence: Saprobic; scattered to gregarious on wood chips, mulch, and grass and in woods.

Edibility: Considered choice.

Comments: The vegetative hyphae of all species of *Stropharia* produce stellate (star shaped) acanthocytes ("spiny cells") like the one in the micrograph in Fig. C. *Stropharia rugosoannulata* uses them to kill soil nematodes,[1] certain species of which are then digested as a source of nitrogen. The sharp, spiny acanthocytes inflict deep wounds in the cuticles of the worms, whose internal turgor then causes the body contents to leak to the exterior, killing them. The worms are then digested and absorbed by assimilative hyphae as a source of nitrogen and other nutrients for the fungus.[2] The acanthocytes of this species also contain nematocidal toxins.[3] See the section on carnivorous and nematophagous (nematode-eating) fungi in the introduction.

1. Nematodes, so-called roundworms of the phylum Nematoda (Nemathelminthes), are free living and parasitic worms found in every conceivable habitat on the planet. Most are microscopic, but one sperm whale parasite reaches a length of 13 m (43 ft).
2. H. Liao et al., 2016, *Appl. Environ. Microbiol.* 72(4):2980–2987.
3. J. Yang et al., 2007, *Appl. Microbiol. Biotechnol.* 75:201–211.

Most of the photographs are not the usual field guide shots, which typically show a group of the mushrooms in the field, with individuals selected to show the progression from young to mature, and arranged so as to illustrate the key features for identification. Instead, most photos show a single individual, sometimes clearly in habitat, other times not. Although focusing closely on an individual mushroom offers the benefit of showing particular features well, there is a tradeoff in not having a group, as it prevents the user from gaining much appreciation for the variability in the species. Although not especially large, the size of most of the photos is adequate to show key features. Many close-up inset photos are included, which is helpful. The technical quality of the photos varies. Some are

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Mushrooms of the Georgia Piedmont, cont.

Cont. from p. 8

quite good, others are not as well lit and exposed as they could have been. A number of photos taken in Europe are included, which cannot be recommended given the frequency at which we are finding our mushrooms to be different from their overseas counterparts. In a few cases, the photographs are not of the species being described. For instance, two of the three photos for *Marasmius oreades* are of an agrocybe, perhaps *A. pediades*, and the third shows an apparently brown-spored mushroom (a psathyrella perhaps?) with gills that are too thin and closely spaced to be *M. oreades*. Based on their coloration, the photos for *Hydnellum aurantiacum* and *H. peckii* appear to be of other hydnellums.

I did not follow up on many of the nomenclatural discussions, as most of them appeared to be accurate. However, given the number of times that the authors point out mistakes in the application of names that others have made, it is ironic that the first species they describe is misnamed. The common yellow morel that, in North America, we have traditionally called by the European name, *Morchella esculenta*, is now correctly named *M. americana*, not *M. esculentoides*, which is a later synonym (by a matter of mere weeks). Another obvious error is in claiming that the name, *Cortinarius marylandensis*, has not been validly published. It has, and those other guides that are said to be in error were not wrong in using the name (although some of them might have done so before it was actually valid). For those who are interested in the sometimes lengthy lists of synonyms associated with the species names, the authors have compiled, based on information in *Index Fungorum* / *Species Fungorum*, *MycoBank*, and other sources, a list that is available on the book's website (downloadable at http://www.ugapress.org/upload/Appendix%20A_Scientific%20Synonyms%20of%20Fungi_01-31-2018.pdf).

Although I applaud what the authors set out to do, clearly there are a lot of shortcomings in the execution, most of which reflect a lack of attention to detail. So, given that, is this a book that I would recommend a mushroom hunter in the Southeast buy? It depends. Despite my concerns, I think that experienced mushroomers (including those known in certain circles as taxonomy nerds or taxonomy geeks) will appreciate the detailed treatments and nomenclatural information. Thus, they will find a lot of value here and, for them, it will serve as a very useful reference. However, less experienced mushroomers might not be prepared for the level of technical detail and would be better served by other more approachable field guides, such as Bill Roody's *Mushrooms of West Virginia and the Central Appalachians* (reviewed in *The Mycophile*, July-August 2003), the aforementioned *Mushrooms of the Southeast*, or even Tim Baroni's *Mushrooms of the Northeastern United States and Eastern Canada* (*The Mycophile*, January-February 2018), which, despite the title, has a large number of species that extend as far south as Georgia. Although these don't go into much detail on fungus biology, Nik Money's *Fungi: A Very Short Introduction* (*The Mycophile*, July-August 2018), offers an inexpensive primer on the subject.

Don't forget to register for the NAMA annual foray!

A Well Deserved Award for Dr. Tom Bruns

Professor Thomas D. Bruns at UC Berkeley is awarded the Mycological Society of America's prestigious Distinguished Mycologist for a life's work basically inventing the field of molecular fungal ecology. Dr Bruns is a NAMA Institutional Trustee.

Longtime NAMA member Erik Purre has passed away. He and Gundi Jeffrey led the MexMush tours in Mexico for decades. A memorial page has been set up on Facebook: https://www.facebook.com/groups/FriendsOfErik/

HESPEROMYCES VIRESCENS – OR, HOW I SPENT THE MEMORIAL DAY WEEKEND
by John Dawson, from The Keystone Cap, Summer 2018

At one of our club's winter meetings four years ago, Danny Haelewaters, a Harvard doctoral student, spoke about the Laboulbeniales, an order of some 2000 species of ascomycete fungi that are rather benign ectoparasites of insects and mites. Their sticky spores adhere to the exoskeletons of a variety of arthropods, especially beetles. Once attached, the spores germinate by penetrating the exoskeleton with a nutrient-gathering organ called a haustorium, through which the fungus "sips" small amounts of blood. The fungus then develops a thallus bearing external male and female reproductive structures. Within the latter, ascospores are produced, which at maturity are released when a trigger mechanism is touched.

Infested *Hesperomyces Virescens*
Photograph by George Morrison

The diagram below, taken from Kathie Hodge's Cornell Mushroom Blog (http://blog.mycology.cornell.edu/2014/01/17/ladybug-fungi/), illustrates those structures on a thallus of *Hesperomyces virescens*, a parasite of the Asian ladybug *Harmonia axyridis* (an invasive species that was introduced to the U.S. to control aphid infestations but that has since spread far and wide and displaced many native ladybird beetle species).

R. Thaxter (1896), Contribution towards a monograph of the Laboulbeniaceae. I. Memoirs of the American Academy of Arts and Sciences 12: 187-429.

The thalli are tiny (about .5 mm long) and cluster in very specific sites on the backs and bellies of the beetles, situated so that when the ladybugs are in position to mate, so are the fungi. In other words, *Hesperomyces virescens* is an STD of ladybugs!

Ever since Danny told us about labouls on ladybugs, I've looked for them, and last winter George Morrison showed me his fine photo (reproduced above) of a heavily infested ladybug that he had found. That encouraged me all the more to search for them, and this past Memorial Day, as Cheryl and I were leaving a restaurant, a ladybug alighted on our car window. I captured it, and when I saw that it was infected, I took it home to examine under the microscope. I succeeded in removing some of the thalli and was excited to obtain the photomicrograph of one of them shown below, whose resemblance to the diagram on Hodges's blog convinced me that I had identified it correctly.

Photograph by the author.)

Photograph by the author.)

What a satisfying way to spend a quiet Memorial Day weekend.

Magic Mushrooms to Treat Depression?
by Jade Scipioni, from https://www.foxbusiness.com/features/magic-mushrooms

The Food and Drug Administration has greenlighted the use of the psychedelic ingredient in "magic" mushrooms for a drug trial to treat depression. The federal agency gave the U.S. approval to a London-based life sciences startup called Compass Pathways that launched in 2016 under the backing of billionaire Peter Thiel. Regulatory approvals for the trial have already been given in the U.K., the Netherlands and Canada.

The trial is expected to be a phase IIB dose-ranging study involving 216 patients in 12 to 15 research sites across Europe and North America. The tests will begin in the U.K. later this month and sites in other countries will kick off as soon as regulatory approvals are received.

For years, many psychedelic scientists have been theorizing that hallucinating on so-called magic mushrooms could possibly reboot the brain and clear out negative thoughts that may contribute to depression.

Compass Pathways says psilocybin therapy, which combines a dose of psilocybin, a psychoactive medicine and the active ingredient in "magic mushrooms," with psychological support has shown promising signals of efficacy and safety as a treatment for depression in academic studies in both the U.K. and U.S. If the trial is successful, the company said it will be followed by phase III studies.

"Depression is the leading cause of ill-health and disability worldwide, and treatment-resistant depression affects more than 100 million people. It is a huge unmet need and the trial will teach us more about how this new approach might address it," George Goldsmith, chairman and co-founder of Compass Pathways said in a statement.

Ekaterina Malievskaia, chief medical officer and co-founder of the company, added that the study has been a collaborative effort with scientists, clinicians, patient representatives and regulators from all over the world.

Thiel, who invested an undisclosed amount in 2016, was one of the company's first high-profile backers.

Oral History for Mycology

Thirty videos are available on YouTube which present interviews with mycologists. The link to them is:
Oral History for Mycology - YouTube
(https://www.youtube.com/results?search_query=Oral+History+for+Mycology)

Book Recall: Tales from a Forager's Kitchen

Rodale Books and our author Johnna Holmgren take very seriously the concerns expressed by readers regarding the preparation and cooking of recipes with raw ingredients (mushrooms and elderberries) that are contained in her recently published *Tales From a Forager's Kitchen*. In light of our review of these concerns, and because of our dedication to wellness, Rodale Books and Johnna Holmgren have decided to discontinue the publication and promotion of the book. We are encouraging retailers to return their stock, and we are offering a full refund to consumers who have purchased the book. Consumers should email foragerskitchen@rodalebooks.com for more information. We are all committed to publishing books that offer reliable and comprehensive guidance about their subjects and we regret the inconvenience to our booksellers and readers.

Judy Roger (1943-2018)
by David Rust and Michael Beug

Judy Roger passed away on July 16, 2018 after a two-year battle with pancreatic cancer. Judy was a life member of the North American Mycological Association and served as NAMA's Executive Secretary for over a decade.

Judy attended the University of Washington where she studied mycology. Judy was a life member of the Puget Sound Mycological Society and the Oregon Mycological Society. She helped found the Estacada Mycological Society. Judy was a board member of the Daniel Stuntz Foundation. Over the years, she taught many mushroom identification and microscopy workshops. In fact, she was scheduled to give a microscopy workshop at this year's annual foray in Salem, Oregon.

Judy was also an avid racer of Siberian husky sled dogs in the Pacific Northwest. She and her husband Phil operated Spindrift Kennels for nearly twenty years in the Estacada area and produced several well-known lead dogs and Iditarod team dogs during that time. Judy was also a life-long gardener and was an active member of the Gladstone Gardening Association where she served as vice president for four years.

* * *

I was very saddened to learn of the passing of long-time NAMA member Judy Roger. Judy died on July 16, 2018 after a long bout with pancreatic cancer. When I last saw her in November of 2017 at an Estacada Mushroom Club talk, we both thought that she had beaten the cancer. She looked great and felt great. It is a shock to realize that her smile and jovial demeanor will no longer grace our forays.

Judy and I joined the Pacific Northwest Key Council and the North American Mycological Association in about 1974 and forayed together regularly over a 44-year period. She was active in NAMA, serving as Executive Secretary for over a decade. For a brief period, she also served as Editor of *The Mycophile*. She organized the highly successful NAMA Foray at Diamond Lake in 2002 when no regional club wanted to assume the sponsorship.

I remember one memorable foray held at Hill's Resort on Priest Lake in Idaho. Hill's Resort was the site of the NAMA annual forays of 1966, 1968 and 1972 (sponsored by the Spokane Mushroom Club), though NAMA soon outgrew the size of that

wonderful foray site. The foray I remember was a later foray sponsored by the Spokane Mushroom club in about 2001. On Sunday, everyone was packing to go home and Judy and I went out for a morning of mushroom hunting around the cabins of Hill's Resort, cabins just being vacated by 100+ mushroom enthusiasts. We picked enough Matsutake that morning to fill my 80-quart ice chest, though we kept our activities as clandestine as possible. I traded most of my share for a case of Syncline Syrah when we stopped at the winery on our way home. Judy lightly sautéed her collection, froze them until spring, and brought them to the Oregon Mycological Society Spring Mushroom Camp at Suttle Lake, Oregon for the mushroom tasting event.

One of Judy's favorite mycological activities was to teach microscopy and encourage the serious study of mushrooms. Her specialty was the study of the genus *Galerina* and she was always ready to help identify non-descript little brown mushrooms. She also was an avid trainer of sled dogs. Many of the dogs she trained did well in the Iditarod Trail sled Dog Race, known as "the last great race on earth".

Michael W. Beug

* * *

When I became an active NAMA member, Judy was my first contact with the organization. I was sent a copy of the roster. Having just done research for our Bay Area club's website, I alerted her to several California club address/contact changes. Next, as

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JUDY ROGERS, CONT.

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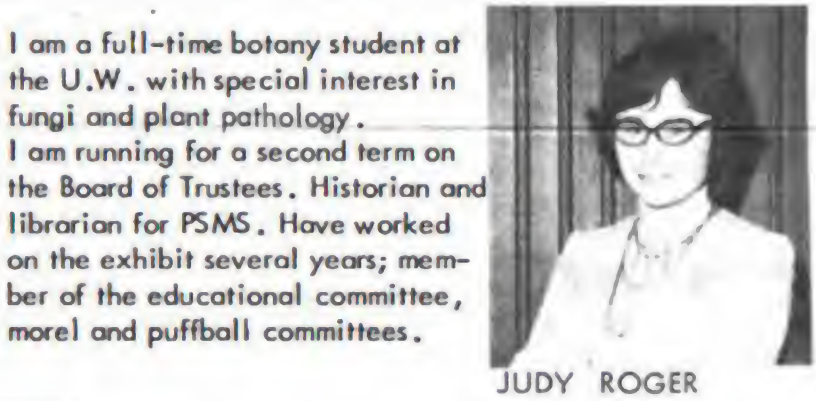
contact for a newly affiliated club, I was sent a copy of the bylaws, which I read, and then suggested some formatting and punctuation changes. Then I waded in on the website with some suggestions there. Looking back at this period, Judy and I communicated almost daily. I couldn't believe how responsive she was to a new member's ideas and suggestions. By the time I arrived at the 2008 McCall, Idaho, foray, we were definitely "buddies". It was Judy's address that was listed on the old version of the NAMA poison poster; even after she stepped down as Executive Secretary, she continued to get and forward mushroom poison calls to the appropriate contact.


I am a full-time botany student at the U.W. with special interest in fungi and plant pathology.
I am running for a second term on the Board of Trustees. Historian and librarian for PSMS. Have worked on the exhibit several years; member of the educational committee, morel and puffball committees.
JUDY ROGER

From the March 1975 issue of the Puget Sound Mycological Society's newsletter, *Spore Prints*.

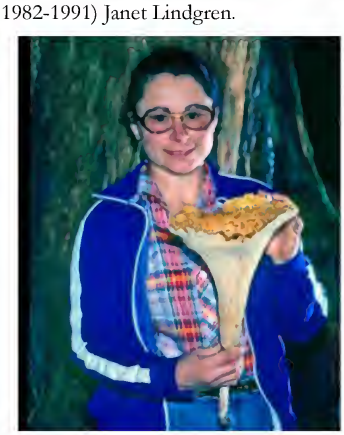
I also knew Judy through her participation in a mushroom presentation on the Oregon chanterelle study project, which she coordinated for a number of years. Each year a small group of mycologists were admitted to a study site in Portland's Bull Run watershed in Mt. Hood National Forest. More often than not, volunteers had to clear the access road of fallen trees. Lorelei Norvell published the results of this study with Judy as co-author: The Oregon Cantharellus Study Project: Pacific Golden Chanterelle preliminary observations and productivity data (1986-1997).

A small representation of past and present OCSP volunteers at the April 1998 meeting of the Oregon Mycological Society. Back Row: Eleanor Milner, Paul Patrick, Kathy Patrick, Tom Jones, Frank Ropecky, Conrad Thorne, Gene Lehmer. Front row: Judy Roger (Coordinator, 1982-2006), Joyce Mills, Maggie Rogers, Lorelei Norvell (Designer-Coordinator, 1982-1991) Janet Lindgren.

The last time I stayed at Judy's home, she took me to the foothills around Mt. Hood to show me the famed sites to see the amazingly huge *Bridgeoporus nobilisimus*. We poked around in the woods for the few mushrooms fruiting at the time, and as we were finishing up, she informed me that I'd need to "work up" and identify all the mushrooms I'd collected. Given my skill level with this endeavor, I was petrified. When we returned, she took us down to the lab, sat me down at a microscope. I don't do microscopes at home and have only rudimentary training. Thanks to her patience, we got through the identification process; it was a great learning experience.

Judy Roger was a friend and mentor to many people in NAMA. Her kindness, curiosity and diligence will be missed.

David Rust



Judy with *Gomphus kauffmanii*

Two New Truffle Species from Florida Pecan Orchards
from the Florida Museum of Natural History, Phys.org

Two new species of truffles were recently discovered on the roots of pecan trees in Florida orchards. The good news is that you can eat them —the bad news is that you wouldn't want to.

While *Tuber brennemanii* and *Tuber floridanum* are edible "true" truffles, in the same genus as the fragrant underground mushrooms prized by chefs, their unappealing odor and small size—about 1 inch wide—will likely discourage people from eating them, said Matthew Smith, an associate professor in the University of Florida department of plant pathology and an affiliate associate curator in the Florida Museum of Natural History Herbarium.

"At least one of the species was pretty stinky and not in a good way, so you wouldn't necessarily want to eat it," Smith said. "These guys are small, and they don't have these really great odors, but the animals love them."

Smith and his team were studying pecan truffles when they found the new species.

"One of the things we wanted to do is identify the communities we find in these pecan orchards because those are the things that are going to be there naturally and those are the ones that are going to be in direct competition with the species we're interested in trying to grow," he said.

Arthur Grupe, lead author of the study and a doctoral student in UF's department of plant pathology, said the team is researching another, more common pecan truffle, *Tuber lyonii*, potentially an important economic crop in Florida.

The *Tuber brennemanii* specimen on the left shows the rough, knobby exterior of the mushroom while the halved specimen on the right shows the interior. Credit: Rosanne Healy

Valued for their pleasant aroma and taste, pecan truffles sell for $160 to $300 per pound. Pecan orchards with a high density of pecan truffles might increase farmers' per acre profit by up to 20 percent, Grupe said.

Even though the two new truffle species might lack the appetizing qualities of more commonly known truffle species, Smith said their discovery is important and points to the significance of conservation, especially in forest habitats. "Just because you don't see diversity easily doesn't mean that it's not there," Smith said. "I guess to me it speaks to the fact that there's really a lot we don't know about the natural world, and it's worth preserving so we can try to understand it."

This *Tuber floridanum*, halved to show the interior, was found in a commercial pecan orchard in Cachoeira do Sul in southern Brazil. Credit: Marcelo Sulzbacher

PHOTOGRAPHS
by Angela Wade

Puffball

Unknown mushrooms

Unknown fungus

Amanita rubescens

Yellow coral fungus

More on the next page…

PHOTOGRAPHS FROM A MEMBER
by Steve Rock

"I thought you'd enjoy this photo of our cat, Ghost, pondering some stinkhorns. I think he's wondering why there are little dogs under the mulch and what could possibly have them so excited.

You may like this one, too—a fruiting of *Boletus sensibilis* just asking to be picked and eaten. Found in northern Putnam County, NY, late June 2018. They were delicious."

Fun With the Mycoflora Project

or: My Transformation from Common Pot-hunter to Pseudo-citizen-scientist

by Dave Layton

I've always been a good-ol'-boy at Prairie States Mushroom Club (PSMC) forays, who'd say, "very interesting" when something like *Phlebia incarnata* was discovered, but actually I'd be totally uninterested because it wasn't a yummy Chicken-of-the-woods. Often my favorite part of a foray would be when it was time to clean up our mess at the end of the day and folks would say they didn't want their *Hericium, ischnoderma* etc. That meant I got to take home the spoils—those that weren't already spoiled anyway.

Everything was all well and good in my pot-hunter world until an energetic Environmental Science student at University of Iowa, Sarah Delong-Duhon joined PSMC last year. I first communicated with her because we both had lots of concerns and questions about the seemingly invasive nature of yellow oysters (*Pleurotus citrinopileatus*). Sarah discovered her love of fungi in spring of 2017 and already she was researching the interactions of fungi, especially certain polypores, more in-depth than any member since Dr. Rosanne Healy, who got her Mycology Ph.D. and went to work out East.

It wasn't long before Sarah told PSMC about iNaturalist and the Mycoflora project. My first thought about all that was: smartphone app—really? Like I'd ever share the location of my bicolor boletes. And genetic sampling—isn't that what's causing scientists to change the names of all my favorite mushrooms? That's so annoying.

However, I quickly learned I was no match for Sarah. She talked about how we now had a platform to really contribute to science. This information might help map environmental trends and protect habitat. By demonstrating ecological diversity in Iowa, we are actually promoting diversity—hmm… preserving Iowa's woods and wetlands also means preserving tasty fungi.

Still, I wasn't on board until Sarah noted that, since Iowa fungi is so underreported, I may actually find a new species and have it named after me. That nailed it. If you want to get me to act, just appeal to my massive ego. Plus that would be redemption for the last time I thought I found an unknown species soon to be named *laytonii*. That time Rosanne clued me in to the possibility that *laytonii* was actually smashed paintballs, which, of course, it was. In her graciousness, she recounted a similar incident of hers with a giant swollen tick. But, I digress.

When Sarah approached the club about applying for a NAMA Mycoflora Grant, I was definitely on board, and I was willing to work with Sarah as PSMC Board liaison for the grant. One of the first things I did was involve Rosanne who, with her typical graciousness, provided us with excellent advice on developing the grant. She was excited because we could add greatly to the diversity of fungi stored at the Ada Hayden Herbarium at Iowa State University. She also used the argument that knowing what is out there is the first step in saving what is out there, and we have a lot of saving to do in Iowa.

PSMC was awarded the NAMA grant so I figured I better put iNaturalist on my phone and learn how it worked. I was amazed at how easy it was to photograph and document fungi with my phone. Once the Mycoflora sample tubes and documentation sheets arrived, I was soon crawling around through nettles and bugs to photograph and sample strange mushrooms. My first sample was an unusual *Bolbitius* growing on mulch rather than dung. What? Why was I having so much fun with some dinky inedible fungus? No matter, it was fun and I now knew more about subspecies of *Bolbitius titubans* than I could ever imagine. Maybe even the whole world will know more about *Bolbitius* now because of iNaturalist and the Mycoflora project. In the past, I ended my research on *Bolbitius* with, "They're not Psilocybes."

At the time of this writing, I've already sampled 19 species of mushrooms for the Mycoflora project, and it's just mid-July! Most of those species are not yet in the Ada Hayden Herbarium, but they will be. For example, we'll at least triple the Russula collection there. I've also finally had the pleasure of hunting mushrooms a few times with Sarah and her boyfriend, Brian, who has a great talent for finding fungi and no desire eat them. Now that's my kind of mushroom hunting partner!

And what about my pot hunting days? Sarah sent a message about unusual fungi at a park in Cedar Rapids. I went there only with the thought of adding

Cont. on p. 21

Foraging for Answers: What Mysteries do Mushrooms Hold?

by Stacey Jenkins, from https://www.rewire.org/video/mushrooms-steve-ness/

Following Steve Ness through the old growth forest of the Olympic Peninsula, I have a sudden thought: "I'll never be able to hike through the forest the same way again." Previously ignored dead leaves, rotting wood and tree branches now have the potential to hide hidden gems: mushrooms.

Mushroom "wellness" has exploded on the health scene this year. Sales of foods containing medicinal mushrooms have surged by as much as 800 percent year-on-year, according to Food Navigator. Whole Foods has listed functional mushrooms as one of its top food trends for 2018. Mushroom varieties like reishi and lion's mane are showing up on shelves in the form of coffees, teas and smoothies.

A forest full of fungi

Ness is an expert mushroom forager who knows the forest like his own backyard. Seeing as we only have to walk 10 minutes from his backyard to reach the forest, he has an advantage.

He takes us to examine an agarikon mushroom behind a fallen log he's been watching since it was a "baby." He pulls up a Dyer's polypore mushroom from under dead leaves that's used for dying wool. He leads us down to the river to reveal Chanterelles hiding in the long grass. It's a fascinating scavenger hunt that has captivated Ness for decades.

"I think its the mystery of their life cycle, they just hold so many life histories," Ness said. "How much do we really know about mushrooms?"

Good question. There are over 10,000 known species of mushrooms in North America, but scientists agree this might be only a third of what's really out there. Ness has joined the citizen scientist movement to learn more about fungi and how it benefits humans and the planet.

An untapped resource

Today's trek is part of this scientific field trip. He was recently awarded a grant to have 30 waxcap mushrooms analyzed for their DNA. We fill out a card for the mushrooms we can't identify, entering information like location, nearby trees, smell and snapping photos. Fun fact: Mushroom DNA is actually more closely related to humans' than to plants'.

Hericium erinaceus (Lion's Mane)
Photo courtesy of Steve Ness.

"It's all interconnected," Ness said.

Scientists are learning more about the amazing benefits of fungi. They are studying mushrooms' ability to break down carbon-based compounds in soil—testing their ability to help clean up oil spills and filter contaminated water.

The health benefits of fungi are also being revealed. Scientists are currently studying the lion's mane mushroom for its ability to enhance memory, which could potentially be used to help people with Alzheimer's and dementia.

Editor's note: Watch the video on this link to Rewire, following Steve Ness through the old growth forest of the Olympic Peninsula.

There is a reference to the video in the article about citizen science on p. 19.

A Hub of Citizen Science in South Puget Sound

by Ellen King Rice

The North American Mycoflora Project (http://mycoflora.org) is a collaboration between professional mycologists and citizen scientists to identify and map macro-fungi across our continent. Currently there are seventy regional projects registered and thirty-five of these projects have been awarded "Sequencing Grants" where amateur mycologists will submit correctly collected samples for DNA analysis.

This is a powerful path for local naturalists to get a "look under the hood" of neighborhood fungi that have caught eyes and raised questions. This work has been generously supported by a gift of $10,000 from Paul Stamets and Dusty Yao, who live and research in the South Puget Sound region of Washington State.

The South Sound Mushroom Club, led by Corinne Srsen, is an active backer of citizen science work like the Mycoflora project. Recently the club changed its mission statement to reflect interests beyond "mycophagy" (the eating of fungi) by stating that the club "is dedicated to safe foraging, identification and conservation of fungi."

This one local club is hosting three of the thirty-five DNA sequencing grant projects. Regina Johnson, an ecologist with the state of Washington, is leading "Olympic Polypores". Regina says, "Wood-rotting organisms, including polypores, are a critical part of forested ecosystems." Steve Ness is examining "Hygrophoraceae of Lower Puget Sound," a group that he has been evaluating for several years [see article on p. 18], while Club members are also exploring more generally under the "South Sound Mycoflora Project."

The group project struck scientific gold on a spring foray when South Sound Mushroom Club member Eric Chandler found a gilled bolete, believed to be *Phylloporus arenicola*, at Millersylvania State Park, which is a range expansion for this species. Eric's find is an excellent candidate for DNA analysis because of the confusion around the distribution of highly similar species, *Phylloporus rhodoxanthus*. We're eager to learn what the DNA says about Eric's find!

There was also strong success in supporting the Polypore project on the same foray. Regina Johnson found a "Smokey polypore," *Bjerkandera adusta*, M. Miazio found the "Elegant polypore," *Polyporus elegans*; E. Roberts found the Root Rot polypore *Heterobasidion annosum* and the Brittle Cinder fungus, *Kretzschmaria deusta*; while Mary McCallum hit a triple by finding Artist's Conk, *Ganoderma applanatum*, the Veiled polypore, *Cryptoporus volvatus* and the Purplepore Bracket Fungus, *Trichaptum abietinum*. This combination of expert leadership with many searching eyes is exactly what the group wants to continue to develop.

A very dry late spring and early summer in 2018 impeded further collections, but the members of the South Sound Mushroom Club will surely be back on the trails and stumps during the fall.

Meanwhile, the Public Broadcasting Service online site, "Rewire" has produced a short video on our area efforts. Follow Steve Ness as he shows how citizens can and do document mycological finds: What mysteries do mushrooms hold? - YouTube

Mushrooming While Awkward
by Ellen King Rice

I fell into mycology. Truthfully, I first fell into a grassy yard that was infiltrated with moss, but that eyeball-to-the-earth experience nudged my brain a bit to consider there might be interesting things happening at the lawn level.

Let's be clear. I am wholly awkward. I suffered a spinal cord injury decades ago, which means I navigate with paralyzed feet encased in clodhopper orthopedic shoes. Leg braces and a pair of canes aid my short steps. Any unevenness in the turf or projecting stone or smidge of ice or slant of surface can be enough for me to reacquaint myself with the Law of Gravity, which is a rigged game in which Gravity always wins.

I've learned to take a breath after a fall. I make a point to look around while I am down at the gravel and duff level. It's a fresh perspective to see this tier of the forest from the side view. Also, taking a moment to see the mouse-high perspective lets my body's alarm system calm down after yet another crashing event. Most of the time, all I've damaged is my dignity, and dignity can be restored when I feel I am reconnoitering new territory.

It was at yet another failure to remain upright that I spotted tiny white mushrooms sprouting from a rotting Douglas fir cone. On another occasion I saw an insect-infested orange mushroom. The next find was a white mushroom wearing a skirt around its slender middle. My interest in mushrooms was growing, albeit slowly, as many falls yielded only close-ups of gravel and dust clouds.

Our home road presents ample opportunity to practice slow navigation. We live in rural western Washington on a five-acre forested patch accessed by a dirt road with a community mailbox row about two hundred yards away. As I walk to collect the mail, I concentrate on each step I take. I scan the road ahead, vigilant as a night watchman watching for any potential disruption to safety. I shuffle along, focused and wary.

Which turns out to be perfect for mushrooming.

Despite my first accidental finds, I was oblivious to much for a very long time. One fall day, I left our front gate to fetch our mail just as our elderly neighbor was passing by on the same errand. He was a bent and dour man and that day he seemed particularly irritable. I was in a perverse mood myself, so I took up the challenge of charming him. I played the babbling brook to his stoic rockiness. By the time we reached the mailboxes at the road junction, we were in agreement that bills and advertising were boring mail, but magazines made the journey to the mailbox worthwhile.

It was on the return toddle up the road that one cause of my neighbor's irritated mood became clear. His face contorted in anger as his words burst forth: "Why aren't you picking the chanterelles?"

"The what?"

"The chanterelles! The chanterelles!" He motioned with his cane at my front gate. His face finally softened when he realized he had lost me. You could see the realization set in as he became aware that not only was he speaking with an awkward woman, but she also seemed to be rather shallow in the brainpan as well. His next words were kind. "You have mushrooms," he said. "Good ones."

He began pushing aside a leaf here, a stick there and gold burst forth every time. Even more embarrassing was the fact there were a number of well-emerged chanterelles that were shining like spotlights—and I had not noticed them. We were ankle-deep in epicurean goodness and I had not noticed. Once the shapes and styles of hiding places were demonstrated, I knew "how" to look. Unfortunately, it was late in the season and the mushrooms were well past their prime. How awful it must have been for my neighbor to walk past every day that fall and see my woodland treasures sitting unappreciated and uncollected.

I vowed I would never again overlook such riches (which, Fungal Fates being what they are, meant that we have not had a repeat of such a flush of chanterelles). That year I subsequently looked for chanterelles on every trip to the mailbox. I looked in December, January, February and March before it dawned on me that fall mushrooms are best sought in the fall. I failed at collecting chanterelles, but I did acquire a better understanding of the forest floor paralleling our road.

A few years passed, as did my neighbor, and then one day the aging process struck my body with an ugly opening salvo. My previously feminine chin

Cont. on p. 21

Mushrooming While Awkward, cont.

Cont. from p. 20

began to sprout a few whiskers! These horrible protrusions were completely lacking appeal and I attacked them with tweezers and a vengeance.

In my disgust, I began to devise an alternate reality. I began developing a story line in which an older woman (a thoroughly adorable older woman) sprouted feathers instead of chin hairs. I recalled from a long ago biology class that feathers, like hair, were made primarily of proteins, so the biochemistry of my idea was possible—in fact, our bodies make proteins constantly. We have the cellular machinery, but instructions to the machinery would have to be different for a human to produce feathers. What could I use as a change agent?

It was again a fall day when I shuffled to the mailbox pondering the question of what could be a trigger to activate human DNA to perform a new function. A number of spider webs were glistening in the late afternoon sunlight. I studied them for a moment. A spider's bite would be ideal, but, dang it, Spiderman's creator had already used that device.

As I limped home from the mailbox, I spied a tall, pale mushroom on the edge of the road (one that I now know as *Coprinopsis atramentaria*, or "Inky cap"). Hmm… Could a mushroom activate a change in human cells? Weren't there some medicinal mushrooms?

My mail was left on the kitchen counter as I flew (well, shuffled more rapidly than usual) to the computer. My life changed that afternoon as I began a year's long immersion in things fungal. Before long I was greeting friends, family and complete strangers with "Did you know that mushrooms…" (Even the dog gets a harassed look at times).

I've learned that the small white mushrooms that sprout from Douglas fir cones are *Strobiluris trullisatus* and that the orange jobs are highly desirable lobster mushrooms (*Hypomyces lactifluorum)* and that lean, gray road edge mushroom is *Coprinopsis atramentaria* or "Inky cap." I've learned that the white mushroom with a skirt may very well be an *Amanita.* I also collected dozens of rejection slips on my proposed story idea. The rejections didn't matter. The mushrooms kept popping up along the road and in my head, bringing to mind the folk proverb: Once the mushroom has sprouted from the earth, there is no turning back.

I wrote my story about mushrooms working as an epigenetic trigger to start feathers. I self-published *The EvoAngel* in 2016 and *Undergrowth* in 2018. I am now at work on a lichen story. A happy side effect of my adventure writing is how I now view difficult people. When someone is being obnoxious, I tilt my head and absorb details because one never knows what will come in handy when describing the next novel's murder victim.

Aging and awkwardness continue and will only intensify as the years arrive. I know I will become slower and have more opportunities to lose to the Law of Gravity. But, thanks to mushrooming along a dirt road on the way to the mailbox, I find I can embrace the words of Don Blanding, who wrote:

"I find that with the passing years my pace is just a little slowed. I may not go as fast or far but I see more on the road."

Ellen King Rice lives near Olympia, Washington. Learn more about her writing at: https://www.ellenkingrice.com

Fun with the Mycoflora Project, cont.

Cont. from p. 17

to science, but it was amazing! Yes, several species were collected for the Mycoflora project. However, I was like a kid in a candy (cap) store. Sarah and PSMC Treasurer Roger Heidt, who joined us for a walk there, both gave me most of their edibles. I thought they were the finest folks I ever met! I spent the next several days comparing the deliciousness of *Lactarius corrugis* to *L. hygrophoroides* to *L. volemus*, in a variety of tasty meals. Plus, I now have a jar of dried bluegreen Russulas (*R. parvovirescens*) ready for a wonderful Thanksgiving side dish. Incidentally, it was Sarah who found that updated Russula species name for me. Before, I really only knew them as Yum!

Cont. on p.13

Macro Photographs of Mushrooms
by Angela Wade

Amanita muscaria

Decaying *Amanita muscaria*

Dried out *Amanita muscaria*

More on the next page…

Macro Photographs, cont.

Oyster Mushroom

Oyster Mushroom

Puffball

Worms in a King Bolete

North American Mycological Association
Barbara Ching
2019 Ashmore Drive
Ames, IA 50014-7208

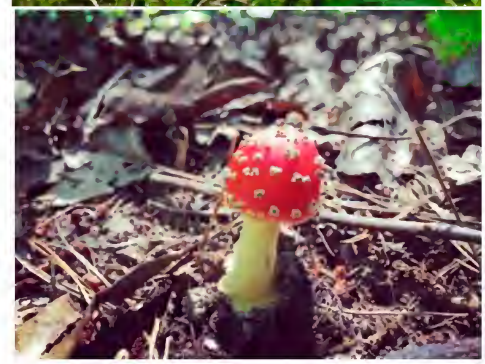
Change Service Requested

Newsletter of the North American Mycological Association
THE MYCOPHILE

Mushroom Photos by Angela Wade

British Soldier lichen

Two colors of
Amanita muscaria



Newsletter of the North American Mycological Association

THE MYCOPHILE

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President's Report 2018

by David Rust

I'd like to start by thanking all the folks in NAMA who were instrumental in making things happen these past six years. At the top of the list, the stalwarts who made NAMA what it is today: former officers and committee chairs who served as advisors when institutional memory was needed: Michael Beug for helping in so many ways including his devotion to Toxicology; Allein Stanley for providing oft needed advice; Ike Forester for working in the background to file our taxes; Ursula Pohl for cooking up goodies every year at the forays; Sandy and Gerald Sheine for stewarding Education activities for decades; Walt Sturgeon for his many identifications at forays and for taking on Awards; Pat Lewis who has been chair of the Finance Committee for six years; John Plischke III for stoically carrying on the photography contest ever year, and for taking photos of vouchered specimens at forays; Patrick Leacock and Adele Mehta without whose hard work voucher collection would not continue. And, in the background, some great NAMA supporters like Elio Shaechter, whose *Registry of Mushrooms in Works of Art* serves a unique interest by our members; the Bessettes, Alan and Arleen, for their steadfast support; Dianna Smith who transitioned from five years as Mycophile Editor to a new role as chair of the Medicinal Mushrooms Committee (you'll be hearing a lot more very soon!), Darvin DeShazer, who serves as an admin on our Facebook page; and Susan Kayser, current *Mycophile* Editor.

New people have gotten involved as well. Thank you to Andy Wilson for taking on Voucher Coordinator and to Stephen Russell for taking the initiative as chair of the Mycoflora Committee. Salma St. John has been elected First Vice President for a three year term; I look forward to seeing her work in this new role.

Every member should know about the wonderful, dedicated work done by the Executive Committee members. Steve Bichler, our current Membership Secretary, is responsible for sending renewal notices, tracking club contact info, updating member profiles, handling manual membership payments and more. Steve is stepping down at the end of this year; we need to find a replacement. Melodie Gates, whom some of you know as our Treasurer, deposits checks and pays the bills; and the past couple of years she has also done all the foray accounting. Howard Goltz dutifully takes minutes at the board meetings (we now hold a telephone conference board meeting once a year). Kathy Yerich, in the role of First Vice President, took over for me during my leisurely vacations in Australia. She also worked with James Stezlinski last year to create a wonderful NAMA promotional video. Connie Durnan, Second Vice President, took on double duty this year as foray registrar and Nominating Committee chair. And of course, our Executive Secretary for three years, Barbara Ching, who handles all sorts of issues by email and phone. Barbara has ensured that our newsletter gets out on time and has worked closely with me on the annual meetings. Thank you all.

At this year's foray in Salem, several people stepped in to make it happen. David Pilz, who used to work at the Pacific Northwest (PNW) Research Station, previewed and wrote up all our collecting sites. Cheshire Mayrsohn worked on organization and the teeshirts Lee Yamada made those wonderful socials happen at Fireside Hall. Sam Landes, NAMA Foray Committee chair, ran it all. Thank you for all your diligent attention to details. It was inspiring to see many new faces at this year's foray, including chief mycologist Joey Spatafora, Ron Hamill, Seri Robinson, Amy Rossman, Barbara (Bitty) Roy, Susie Holmes, Rich Tehan, Jon Donoghue, Fred Rhoades, Joe Spivack, and Roo Vandegrift—all with amazing PNW mushroom expertise. I have a feeling we'll be seeing many of these folks at future forays. I'd like to send a special thank you to Danny Miller for identifying so many fungi at the ID area.

Cont. on p. 4

Upcoming Forays & Other Events

The events page of *The Mycophile* publicizes forays and events of NAMA affiliated clubs which may be of interest to our members. If you would like to list your club's next big event, contact Susan Kayser, Editor: mycophile@namyco.org.
Include date, location, brief description, link for information, and host organization name.

NAMA Annual Foray 2019
The next annual foray will be in the Adirondacks, at Paul Smith's College, Paul Smiths, New York on 8-11 August, 2019.

Mushroom Evolution "Tree"
Photo by Susan Kayser

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HOPE MILLER, 1933-2018
from Cathy Cripps (including photos)
and http://www.brothersmortuary.com/obituary/hope-miller

Hope Miller, wife of Orson K. Miller, Jr. passed away on September 26, 2018 in Missoula, Montana. Hope was born on June 10, 1933; she grew up in Gardner, Massachusetts, and attended college at the University of Massachusetts in Amherst, where she met her lifetime companion Orson K. Miller, Jr. Hope and Orson were married in 1953 and they embarked on an adventurous life together. Orson's career as a mycologist and professor at Virginia Tech allowed Hope and Orson to travel the world studying mushrooms and meeting colleagues and friends.

Hope made significant contributions to the field of Mycology, not the least of which was her dedication to helping husband Orson Miller in countless mycological endeavors. She was co-author and editor for many of their books and an author in her own right of two cookbooks: *Hope's Mushroom Cookbook* and *Wild Edible Mushrooms.* Her special interest in Beatrice Potter led her to give several talks on the subject. For decades, Hope was Orson's constant companion at professional and amateur meetings, and on international and local field trips. It was Hope who did the navigating, telling Orson when to turn left or right, both driving and metaphorically. Her strong presence will be missed.

In recent years, Hope moved from McCall, Idaho to Missoula, Montana to be near her daughters who were in attendance at her passing.

Cards can be sent to:
Miller Family (Attn: Ginny and Andy)
4018 Heritage Way, Missoula, MT 59802

Donations in her memory can be made to:
Mycological Society of America, Orson and Hope Miller Mentor Travel Fund (in honor of Hope Miller)
or to the North American Mycological Association (in honor of Hope Miller)

Salma St. John, NAMA's New First Vice President

Salma St. John has a keen interest in mycology; she researches interesting topics on mushrooms and fungi in general. She has written and contributed many articles to newsletters.

Salma is a food and animal advocate. She is also a gourmet chef that won several awards for her outstanding food innovations and creativity (some of her products have been sold in health-food stores for years). Some of her interests are mushroom foraying, traveling, hiking/picnicking, gourmet cooking/baking, gardening, and playing Bocce.

Dr. St. John obtained a Ph.D. and an M.A. from Ball State University and Indiana University, Bloomington, respectively. She is a professor of Linguistics, a translator/interpreter, a researcher, an editor, and a writer. In her career, she has held many positions, such as Assistant professor (Ball State University and St. Louis University), Director of ESL program (Fontbonne University, St. Louis), Director of Student Services (ELS, Princeton), and Senior Translator/Interpreter (CanTalk, Canada).

Jacob Golan NAMA Memorial Fellowship, 2018

Jacob Golan is a PhD candidate at the University of Wisconsin-Madison, studying with Prof. Anne Pringle. His research focuses on how fungi move—from across landscapes to across continents—and approaches questions of dispersal from biophysical, genetic, genomic, and ecological perspectives to understand better fungal biogeography, epidem-iology, and population dynamics. Two emerging model systems currently serve his research: *Alternaria alternata/A. solani* in his biophysical work, and *Amanita phalloides* in his genetic and genomics work.

President's Report, cont.

Cont. from p. 1

It's been delightful and sometimes a true test being NAMA president for six years. I am honored to have had this privilege. I've had the chance to work with many wonderful people and unsung heroes in the "NAMA community". Finally, a thank you to my wife, Debbie Viess, for putting up with so much "NAMA work" and phone calls around the house, and for all her wise counsel.

Please welcome your new president: Barbara Ching. I'm sure she'll do a great job in the next three years!

New NAMA Executive Secretary needed!

Hiking and Foraying Along the Appalachian Trail

by Will Wright

In the spring of 2016, realizing the efforts to rehabilitate the muscles attached to a new pair of titanium hips wasn't going so well, I reckoned a new approach might be the ticket. Being a former Army infantryman, I thought maybe something akin to a long range reconnaissance patrol would regain my leg strength. So I made plans, read books, bought gear, and in late May, headed to Amicalola Falls State Park, the closest lodge to the beginning of the Appalachian Trail (AT), Springer Mountain, Georgia (if starting from the southern terminus).

As I heard from locals at the Lodge and witnessed first hand myself, more than a few "would be" hikers cancel their AT hiking plans on the first or second day—and idea that would have great appeal to me too by the end of my first day of hiking. While the guide books mention the distance from the Lodge to Springer Mountain is seven miles, they fail to mention that it's all uphill, or that seven becomes eleven if starting from the long term parking lot. Drought had blanketed the southern mountains in 2016, resulting in there being no water along the ascent up to Springer Mountain. Packs were heavy with water or hikers turned back and quit.

The first day was far tougher than I expected. The next day was made worse by having to set up my jungle hammock in darkness and pouring rain. The next morning I contemplated giving up and heading back to Sarasota. I called my son and sought his advice. He encouraged me to keep going, and to give up on my original plan of camping near shelters, and instead, just hike as far as I could each day and camp solo out in the woods. He said "Dad, you carried a machine gun all the way through Viet Nam and Cambodia—you can camp in the woods by yourself just fine." Never being one to argue with superior logic, I took his advice. I got off the trail the next day, mailed home 10 pounds of gear that was "not that necessary after all", and continued.

The month of June was spent hiking (slowly), concluding each day's hike by eating a dehydrated trail meal and listening to NPR. The thing about freeze-dried meals is, they are fantastic because they are so light and convenient. And they taste pretty good too —for two or three bites. After a few weeks of this diet, I began to wonder if any of the mushrooms I was walking past every day were edible. At first I was able to put this thought aside, confident eating wild mushrooms was just another form of "Russian roulette" and would surely lead to my flesh contributing to the sustenance of mama bear and her cubs—not my idea of a "a good death". But after a while these nonsensical notions became genuine curiosity—I am convinced it must be an unlisted side effect of consuming freeze dried meals.

My lack of leg strength limited how much I could carry and how far I could go before late afternoon, so I had to go off trail every three days for resupply (along with a shower and a bed). On one such occasion, I made an impulsive decision to buy a book about mushrooms. While the bookstore had several choices, I wanted the smallest book I could find, being painfully aware of the old trail adage that's 100% truth: "ounces make pounds, and pounds make pain." So I bought the *Audubon Pocket Guide to Familiar Mushrooms*. It was perfect for a distance hiker who's also a mushroom novice, with pictures on the right hand page and accompanying text on the left.

After completing nearly all 90 miles of the Georgia section of the AT (and likely breaking the slowest pace record ever recorded), I was feeling pretty good about the prospect of making it out of Georgia and into North Carolina the next day. I was off trail that evening and having dinner at a restaurant in Hiawassee, Georgia. The waitress noticed me reading my now rather worn and tatty mushroom book. We chatted a bit and she asked if I was eating any of the mushrooms I had seen thus far. I advised her I wasn't ready for that step just yet. She then pointed to the couple seated over at the bar, and informed me they were regulars and friends of the chef. The waitress went on to tell me the couple were mushroom hunters and had just exchanged some chanterelles for a meal. Mushrooms for food? That got my attention.

Cont. on p. 6

Hiking the AT, cont.

Cont. from p. 5

After finishing my meal I walked over to the bar and introduced myself. The three of us chatted a bit, I bought a round of drinks, we chatted some more and I shared my conflict about wanting to learn about edible wild mushrooms, but being hesitant to eat them due to the possibility that my ignorance might prove fatal. This couple gave me encouraging words and a quick primer on how to identify chanterelles, and where to find them. Not all they collected went to the chef that evening, and they were kind enough to show me fruits of their labor. That was the shove that pushed me off the fence of mushroom hesitancy.

I continued to hike the trail that summer of 2016, reading more about mushrooms every few days when off trail for rest and resupply. I was having "trail angels" move my car further north as I hiked, so it would be waiting for me at the next place I planned on getting off the trail. By July, my SUV was slowly becoming a mobile mushroom library (Amazon prime is an amazing resupply phenomenon for the AT hiker). With each passing week, I took more pictures with my phone and got more and more involved in mushrooming.

The first mushroom I photographed was an odd thing growing at the base of a tree. This was in north Georgia as I was descending down to US 76. It was near the end of the day, I was out of water, beyond thirsty, and hoping to get off trail that evening. I suspect this was the Mossy Maze Polypore (*Cerrena unicolor)*, but I was too tired and thirsty to examine it closely. Nonetheless, it was beautiful and otherworldly, looking like it belonged on a coral reef in the South Pacific. This was that "epiphany moment" where I regretted not stopping to look at all the many fungi I had seen along the trail thus far, and decided from here forward I was going to "stop and smell the roses" whenever I encountered a mushroom.

As my days turned into weeks, I saw many oyster mushrooms, (*Pleurotus ostreatus*), but I was always a day or two late, as time and critters had gotten to them first. While off trail, I found some oysters at a local farmer's market and tried some with butter and a little garlic—a new friend was found.

Other hikers told me about the "Chicken Mushroom" (*Laetiporus sulphureus*), swearing it tasted like chicken breast. This mushroom was common along the AT, and with the motivation of tasting a mushroom that tastes like chicken, well, I collected some and cooked them when I was reconnected with my car. Having read somewhere to go easy on the onions when cooking mushrooms, I did. With some butter, a pan full of chicken mushrooms, a few onions, dumped onto spinach pasta, another great trail meal was had.

The first bolete I encountered was the infamously bitter Violet-Gray Bolete (*Tylopilus plumbeoviolaceus*). This fungi is not listed in all guide books, so its identification was delayed until after I returned to Florida. Lucky me, I suppose, as only a small piece will make an entire dish inedible.

There is not enough space within the confines of *the Mycophile* to discuss all the fungi I encountered between Springer Mountain, Georgia, and Shenandoah National Park. But I did see several clumps of a species that apparently is quite rare, the Black Trumpet mushroom (*Craterellus fallax*). These were common in the stretch between Franklin, North Carolina, and the Nantahala Outdoor Center, a 30-mile stretch that is one of the least traveled sections of the southern AT. Little did I know they are considered by some chefs to be the best tasting of all mushrooms. Better luck next time, I suppose.

Cont. on p. 7

Hiking the AT, cont.

Cont. from p. 8

When I began my hike I had no clear date as to when I would stop. I knew I didn't have the time to go all the way to Maine, but how far to go? By the time I reached Franklin, North Carolina, I had been bitten by two bugs—the mushrooming bug and the AT bug. The alter ego of my youth—my Huck Finn side—had resurfaced, and most of the pain from carrying a 35 pound rucksack (unaffectionately named Bitch) had become at least bearable, and often joyful. I decided I would keep walking and end my trek in Shenandoah National Park, having found an organization called NAMA that was having something called a foray in Front Royal, Virginia. So for three and half months that's what I did—solo hike the AT, learning all I could teach myself about mushrooms.

My learning continued while at the Front Royal foray. I was one of the lucky ones who were able to take the microscopy class, and yes a microscope is in my future. I also took advantage of the truffle talk and walk—outstanding. The facility? Well, it was better than camping. I went away from my first NAMA event thinking mushroom people were highly intelligent, very interesting, and a wee bit on the eccentric side—exactly my kind of people. There are many similarities to my other passion—tropical fruit gardening.

Blood Mountain, highest peak of AT in Georgia

I feel compelled to mention a couple of items concerning health and safety while hiking the Appalachian Trail. For several years now the Wall Street Journal (WSJ) has been covering the dramatic increase in Lyme disease. The primary reason for the increase in the disease is loss of habitat for the predators that prey on field mice. As reported earlier in the WSJ, an average field mouse carries about 140 deer ticks on its skin. Deer ticks are the ticks that carry the pathogen for Lyme disease. About every 5 to 10 miles along the entire length of the AT, there is a primitive shelter for hikers to use for overnight stays. These shelters are absolutely full of field mice due to all the food in the backpacks. The mice have adapted to the presence of hikers. During the night they will eat through any pack to get food that has not been hung up in a bear bag (and they can get to a bear bag if not set up correctly). They scurry about all night long engaged in petty larceny. If you are a light sleeper, you will hear them and sometimes feel them if you sleep in a shelter. So the "easy way" to get Lyme disease is this: the shelters are full of field mice, the mice are covered in deer ticks, some of the ticks carry Lyme disease, and sleeping in a shelter puts you in the middle of things, maximizing your potential exposure. Because of the high numbers of field mice in the vicinity of the shelters, dangerous snakes are commonly found living under the shelters. Many shelters have hand-made signs warning hikers of a venomous snake living under the shelter. For this reason, I use a hammock with a rain fly above it, which will keep one dry even in the most violent thunder storms if it has been set up correctly. I never sleep in or near a shelter. I never had a tick embedded in my skin in three months of hiking. One can camp near a shelter and take advantage of their water supply and primitive toilet, as I did a few times, but I recommend not sleeping inside the shelter structure itself (in National Parks you are required to sleep inside the shelter).

The other danger on the trail, other than the obvious ones of exposure, dehydration, broken bones and such, is people. Over two million people use some portion of the trail every year. Considering the number of people out there on the trail, the crime rate is very, very low. But you can't get two million people together without there being some bad apples, so crime does happen, including the worst of the worst, like serial killers and serial rapists. But it can be avoided. Nearly all crime on the AT has taken place at shelters that are within a mile or so of a highway. On weekends the shelters close to highways can be overtaken by what I call "BillyBob and Bubba locals", with drinking and partying and rowdiness. Yes, the shelters are supposed to be for through hikers only and not locals, but there are no "shelter police," and in summer, on weekends, you may see shelters full of people who have no rucksacks. If you encounter this cultural ritual, it will

Cont. on p. 10

Sister Marie Kopin
2018 Harry and Elsie Knighton Service Award

Sister Marie Kopin is the 2018 recipient of The Harry and Elsie Knighton Service Award. She has been a long serving member of the MMHC board, as Secretary and parliamentarian, volunteer positions that take up many hours. She also arranges and supervises used mycology book sales and also offers to lead children's walks at our annual Fungus Fest. Marie annually leads at least six hunts in the mid Michigan area which are open to the public. Sister Marie is the Isabella County Foray Leader from the Michigan Mushroom Hunters Club. She has taught mushrooming on several occasions to both youth and adult groups. She has also authored several articles in *Spores Illustrated*, the MMHC magazine. Sister Marie has also authored several articles in the Michigan Mushroom Certification Project book (Midwest American Mycological Information) led by Chris Wright, PhD, Executive Director.

David Rust and Sister Marie Kopin

Sister Marie continues teaching at the Commission On Aging in Mount Pleasant, Michigan, doing a class in the Spring and Fall. Also, last year she worked on a class project with local Mt. Pleasant high school students and their teacher designing and producing teeshirts for our club. This spring, she and Heather Johnson presented an art class featuring mushroom designs on gourd birdhouses. She also arranges mushroom-themed art projects in Mt. Pleasant, Michigan.

She is the historian for MMHC and maintains the club records which are stored at Central Michigan University in Mt. Pleasant.

She is a retired clinical supervisor in the Department of Communication Disorders at Central Michigan University

Sister Marie Kopin is a volunteer 'Co-Steward' of the Alta Warren Parsons Memorial Nature Sanctuary in Clare County, Michigan, near Farwell. It is owned and protected by the Michigan Nature Association (MNA), which has just celebrated its 60th anniversary of existence in preserving vital types of plants and wildlife areas of Michigan. Marie is a life member of MNA. The Michigan Nature Association is one of the leading associations in Michigan which sponsors workdays to remove this and other invasive plants.

Sister Marie Kopin's father was a friend of Dr. Alexander Smith, who founded NAMA with several other mycologists and amateur students. Sister Marie has attended many NAMA Forays and Board meetings. She and her father were original members of the Michigan Mushroom Hunters Club, founded in 1981.

Jim Trappe Receives 2018 Gary Lincoff Award for Contributions to Amateur Mycology

In 1978, instructor Tony Walters of Linn Benton Community College approached Dr. Jim Trappe, an expert in truffle research, and asked him to deliver a presentation about truffles to students enrolled in his mushroom identification course. After Dr. Trappe's very well-received class presentation, Tony approached him a second time, this time to ask whether Jim would be willing to help organize a group dedicated to science and education about truffles in North America. And so, the North American Truffle Society (NATS) was established, dedicated to enhancing the knowledge of truffles and truffle-like fungi and open to people from all walks of life.

Jim has authored or co-authored 402 new species names of fungi (mainly truffles), along with 40 genera, two families, and one order of fungi. His book, *Trees, Truffles, and Beasts* (Maser, Claridge, and Trappe, 2008), describes the complexities of forests, fungi, and animal interactions in a very readable format. He is also a co-author of the *Field Guide to North American Truffles: Hunting, Identifying, and Enjoying the World's Most Prized Fungi* (Matt Trappe, Frank Evans, and Jim Trappe, 2013) making truffle identification possible for amateurs.

Jim has personally inspired an array of individuals with diverse backgrounds, from firefighters to oceanographers. For example, Jim's tutelage sparked a passion for truffles in a retired fireman. He became an active NATS member for the rest of his life and undertook a weekly, one-hour drive to Corvallis, OR to help accession truffles into the Oregon State University Herbarium. Over the course of his time with NATS he collected over 3,000 truffles, including some species new to science. After his memorial service, his son sent a touching message to Jim's son, saying, "My father enjoyed working with all of you so much I want to thank you and your father, Jim, and the rest of the group, for making him feel like an equal."

Jim's teachings and encouragement were meaningful to another long-time NATS member who, upon retirement from the Oregon Department of Fish and Wildlife, participated in NATS forays and meetings. He also assisted with the preparation of specimens for the OSU fungal herbarium for many years. His experience with Jim made him feel fulfilled and appreciated in retirement.

Another long-time NATS member volunteered her time to help catalogue truffle specimens for the herbarium, even as she continued working as an office manager for an engineering firm. She and an older NATS member (a retired nurse), have prepared specimens weekly at the USDA Forest Service, Forestry Sciences Lab. Both now retired, they continue to volunteer, even after the elder turned 90 years old!

NATS's current president discovered the NATS organization not long after moving to our area. Jim's helpfulness and willingness to teach her truffle identification skills in the field or with the help of a microscope, led to her long involvement as vice president and now president. She found Jim's encouraging demeanor an inspiration to continue learning about both truffles and mushrooms.

Our current NATS's secretary, a member since 1980, enjoys memories of monthly meetings held in Jim's lab, where he demonstrated microscopic techniques for the identification of truffles. He further educated members in making temporary identification of specimens in the field based solely on physical characteristics. Many individuals became reasonably adept at identifying sporocarps, but what she appreciates most is that "Jim is never too busy to talk with me and continues to give guidance in identifying truffles. His contributions to the field of

Cont. on p. 10

Lincoff Award to Jim Trappe, cont.

Cont. from p. 7

Jim Trappe (center) gives an orientation to his BioBlitz 2016 team.
Photo credit: Friends of Cascade-Siskiyou National Monument.

mycology are known worldwide, and amateurs such as me appreciate his dedication and friendship."

When a young man named Todd Elliott contacted Jim about a truffle he had found, Jim ended up working with the then 12 year-old to publish his find. They have now traveled throughout Europe and Australia together, and Todd is soon starting a PhD program, thanks largely to being inspired by Jim.

In addition to presentations to NATS, Jim has supported many other amateur mushroom clubs with his interesting talks—including the Oregon Mycological Society, Cascade Mycological Society, Vancouver Mycological Society, Sonoma County Mycological Association, Los Angeles Mycological Society, and the Oregon Truffle Festival. He has participated in field trips for amateurs too numerous to list, but two excursions serve as examples: In 2002 Jim was the Chief Mycologist for the NAMA Annual Foray and in 2016 was a leader for the Fungi BioBlitz in the Cascade-Siskiyou National Monument (see photo) where about 90 citizen scientists participated and found over 120 mushroom and truffle species. These efforts focus on the west coast of North America, but he has also engaged in many similar activities throughout North America and in countries around the world.

Dr. Trappe's roots run deep. He serves as a connection between past and current generations of mycologists, professional and amateur alike. What makes Jim really special is his warmth and his desire for inclusion of anyone with an interest in mycological matters, no matter their experience or skill level.

Hiking the AT, cont.

Cont. from p. 7

only be at shelters close to a highway. So if you hike, look at your map and pay attention to where the highways are, and plan accordingly. Having done a study of all the crimes on the AT over the years, it is my opinion that the 110 mile section of the AT inside the Shenandoah National Park is the most dangerous section in the entire 2,200 mile length of the trail. There are four unsolved homicides from this area. Someone in your party should carry either a can of bear spray or a small pistol for self defense—from people, not bears. Bear spray is twice as strong as pepper spray and not legal to use on humans—but it will stop any attacker instantly, as effective as a bullet. It would offer no protection unless it is kept immediately accessible—keeping it in the bottom of your rucksack would be of no benefit, should you need it.

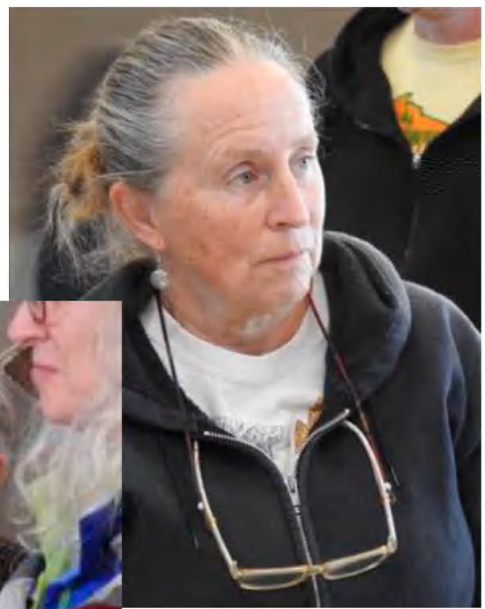
On a final note, if there are any NAMA members who are overnight backpackers and interested in hiking portions of the AT, please contact me through the membership roster. I plan on more hiking and mushrooming along the AT in 2019.

NAMA Foray Photos
from Wallace Kaufman

Cont. on p. 12

NAMA Foray Photos, cont.

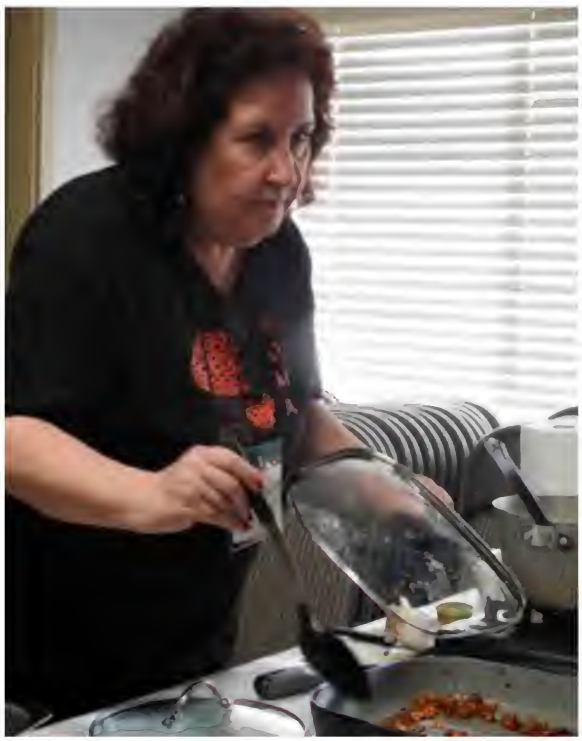
Cont. from p. 11



Cont. on p. 13

NAMA Foray Photos, cont.

Cont. from p. 12



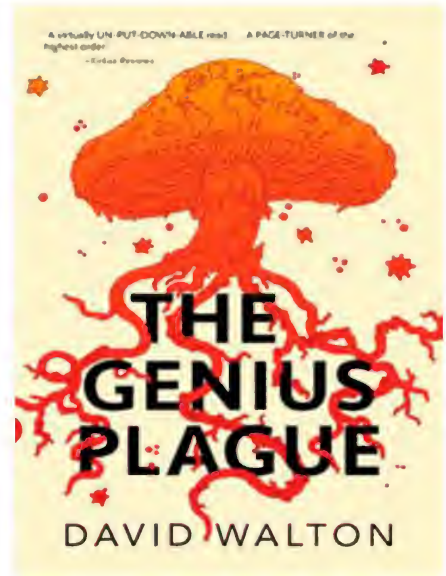
Cont. on p. 14

NAMA Foray Photos, cont.

Cont. from p. 13

Book Review: The Genius Plague, by David Walton
by Susan Kayser

This science fiction thriller ($12.29 paperback at Amazon) has a mushroom mycelium as the villain. Its spores induce a lung infection, and those who recover find themselves with much greater intelligence—the mycelium has invaded the victim's body, including the brain, and generated more efficient pathways. But there's a catch, of course: The fungus, like every living thing, has as its goal to grow and spread, and infected people find that their actions become controlled by efforts to spread the infection. The characters include a young, brash young mathematician who somehow secures a job at the NSA, and his older brother, a mycologist who is among the first American to be infected. The characterization is entertaining, if one-dimentsional, and the plot has some unexpected twists. The ending is rather abrupt, and leaves the reader wondering if the world is better or worse off at the end.



Another NAMA Foray Photo

Group picture from Big Meadows foray
Photo by Ledo Setti

FALAFEL Wraps Up Citizen Mycology Weekend in Florida

by Sarah Prentice

The Florida Academic Lichen And Fungi Enthusiasts League (FALAFEL) held its Citizen Mycology Weekend in Gainesville on June 21-23, with the goal of advancing citizen science and the study of wild fungi in North Central Florida. All events were free and open to the public, drawing attendees from as far as Louisiana and Tennessee.

The centerpiece of the three-day event was a mycoblitz that collected fungal specimens, many of them under-studied resupinate polypores, to be submitted for DNA barcoding as part of the Mycoflora of Florida project. This research—led by FALAFEL president Arthur C. Grupe, a University of Florida doctoral candidate in mycology—is funded by a grant from the North American Mycoflora Project.

Mycoblitz participants ready to collect fungi at Sweetwater Preserve in southeast Gainesville. Photo by David Tate

The most exciting find of Citizen Mycology Weekend was an *Arthromyces* species collected during the mycoblitz at Sweetwater Preserve in southeast Gainesville. The tiny mushroom was found on a Loblolly pine cone by Jennifer A. Rogers, a Florida State University student who is new to collecting fungi, and identified by Jacob Kalichman. They were two of about 30 participants. *Arthromyces* is an extraordinarily rare genus in the *Lyophyllaceae* and is related to *Termitomyces*, an African and Asian genus that is cultivated by termites. Described in 2007 by Dr. Tim Baroni, it has been found only a few times in Central America and the Caribbean. Arthromyces species produce conidia (asexual spores) on the stipe and cap—anamorphic spores are produced on the teleomorphic mushroom! A tissue sample was successfully cultured and the specimen has been accessioned into the UF fungarium.

The weekend kicked off with the Transcribe-a-Thon, at which more than twenty volunteers gathered in the computer lab of UF Marston Science Library to help digitize 675 records in the fungal herbarium of the Florida Museum of Natural History (FLAS), via Mycology Collections Portal (MyCoPortal). Dr. Matthew Smith, associate professor in the UF Department of Plant Pathology and curator of FLAS, opened the Transcribe-a-Thon with a discussion of the rust genus *Uromyces*, which was the focus of the volunteers' efforts. The transcription was facilitated by lichen expert Laurel Kaminsky and research scientist and herbarium collections manager Rosanne Healy of the Plant Pathology department, as well as UF agricultural sciences librarian Suzanne Stapleton.

Among the guest educators were Alan and Arleen Bessette of Georgia, the veteran educators and co-authors of numerous field guides including the new "*A Field Guide to Mushrooms of the Carolinas*" (University of North Carolina Press, 2018) with Michael W. Hopping. Alan presented a visually rich lecture, "Florida's Beautiful Mushrooms: A Photo Foray."

Transcribe-a-Thon volunteers type out fungarium labels in the computer lab of UF Marston Science Library. Photo by Bill Sheehan.

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FALAFEL Foray, cont.

Cont. from p. 16

On the event's final day, the Bessettes, along with Dr. Smith, led two entry-level workshops on mushroom identification. The intensive, four-hour sessions covered basic morphology, use of a dichotomous identification key, microscopy, chemical testing, spore-printing, and collection techniques for beginners.

Another visiting expert was Dr. Bill Sheehan of Georgia, who described the North American Mycoflora Project Inc., of which he is president. NAMP facilitates collaboration between volunteer mushroom enthusiasts and professional mycologists and has nearly 100 registered mycoflora projects across North America, including the FALAFEL-sponsored Mycoflora of Florida.

Dr. Pamela S. Soltis, a plant biologist and director of the UF Biodiversity Institute, also presented a lecture, "iDigBio, WeDigBio, and Digital Mycology." iDigBio, which stands for Integrated Digital Biocollections, is the national resource for digitized information about vouchered natural history collections, including fungi.

Citizen Mycology Weekend was capped by Toadstools in the Taproom, a fundraising event at First Magnitude Brewing Co. in downtown Gainesville.

FALAFEL was established in March 2017 by a small group of University of Florida mushroom enthusiasts. It is the only Florida-based club affiliated with the North American Mycological Association. The league hosts a monthly lecture at UF Marston Science Library and regular forays during the rainy summer months.

FALAEL is set to hold several Gainesville workshops during the fall and winter, including Mycological Illustration for Beginners, Lichen Hikin', and a two-day Cultivation Campout. Visit FLmycology.org and follow on Facebook and Twitter @FLmycology for updates.

Bill Sheehan discusses the North American Mycoflora Project. Photo by Sarah Prentice

Jennifer A. Rogers found *Arthromyces* sp. on a Loblolly pine cone. Photo by Jacob Kalichman

Brian Thornton staffs the FALAFEL fundraising table at First Magnitude Brewing Co. Photo by Nicole Gilbo.

Reishi Mole and Tortilla Recipe
by Valerie Nguyen

Tortilla Recipe

The Base Ingredients:

• Organic Masa Harina (nixtamalized corn flour, see below) • Water • Sunflower Oil

The Technique:

1. To prepare the masa dough: in a large bowl, little by little, mix warm water into masa harina. Using your hands, work the dough into a malleable consistency: not too wet so that it sticks to your hands, not too dry so that it cracks and crumbles. It should feel plump and hold together. Do this at least half an hour and up to a day before you are ready to make the tortillas, so that the flour can hydrate evenly. When ready, hand-roll masa into small orbs and press each ball flat to form tortillas.

2. To cook the tortillas: heat the pan over medium-high heat, hot enough so that when you sprinkle water on it, the droplets sizzle-dance and evaporate immediately. Brush or wipe the pan with sunflower oil (or another high-heat tolerant oil). Place a freshly-pressed tortilla onto your pan and let cook for about 15 seconds, or until the tortilla releases from the pan and can twirl around freely if nudged by swift fingers.

Flip the tortilla and cook other side for about 1 minute. Flip back onto first side for another 30 seconds.

Variations:

Fresh mushrooms: Cook in your favorite way and blend into a puree and add to the masa dough in place of water. Older lobster mushrooms and bolete pores.

Dry mushrooms: Lightly toast until fragrant and shatter-crisp on a pan. Powderize in a coffee grinder. Add to the dry masa flour and go from there.

Cultured mycelium of medicinal kinds: When mycelium has fully grown out and is ealthy (no signs of contamination), release polysaccharides by simmering for 20 minutes to a porridge-like consistency. Let cool to room temperature and add to dry masa.

Whole mushrooms of medicinal kinds: Simmer whole mushroom (Reishi, Turkey Tail) for 20 minutes, strain out the mushroom pieces, use the tea instead of water to hydrate your masa.

Herbal flavors: Add aromatic herbs such as cumin and fennel or fresh pureed herbs.

Natural colors: Yellow/Turmeric, Red/Cooked Beet Puree, Green/Nettle Cilantro Jalapeno Spinach..

Reishi Mole Recipe

The Ingredients:

The Aromatics

• Dried chiles (chile negro, pasilla, guajillo, ancho), cinnamon, cumin, clove, coriander, anise, garlic, laurel leaf, oregano.

The Body

• Cacao, plantains, sesame seed, pumpkin seed, hazelnut (almond/peanut), raisins, charred onion, charred ginger, charred ripe tomato, golden fried tortilla.

The Unifier

• A vegan stock of reishi and turkey tail mushroom, for resonating bitterness and umami.

the aromatics (element: Fire)

Open the kitchen door—or, better yet, make your kitchen outside. In a pan with a shallow layer of oil, toast the chiles, three or four at a time, over medium heat, until they puff and darken, just a few seconds on each side, taking care to not let them burn or smoke. Soak puffed chiles in hot water for 30 minutes, then remove and compost the stems and seeds. (If you like it spicier, remove the seeds prior to toasting and toast separately to volatilize harsh oils before recombining with soaked chiles). After 30 minutes, taste the soaking water: if it is exceedingly bitter (due to overly charred chiles), drain and change out with more warm water. If it's not bitter, blend chiles with some (but not all) soaking water, just enough to allow it to be velvety smooth. Press through medium-mesh sieve to catch stray bits of seeds and skin. Now, toast the cinnamon, cumin, clove, coriander, anise until popping and fragrant.

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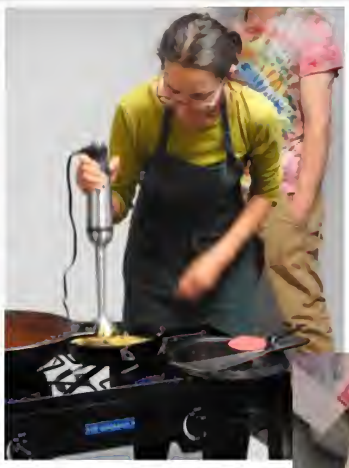
Reishi Mole Recipe, cont.

Cont. from p. 18

Demo by Valerie
Photo by Susan Kayser



Valerie mixing batter

Two batches of tortilla mix and balls which flatten to 5" tortillas
Photo by Sister Marie Kopin

Ingredients for mole
Photo by Susan Kayser

the body (element: Stone)

Pan sear the tomato with oregano on blistering heat and set aside in a large bowl once soft and saucy. To this bowl, add: charred onion, charred ginger and golden fried garlic; nuts and seeds that you've toasted over low heat until puffed, fragrant, and popping out of the pan, and then pounded/ground into fine powder; plantain and tortilla that you've fried in sunflower oil until golden; raisins until they've puffed. Grind and also add your toasted and ground cumin, clove, coriander, anise. Now, grind and/or blend this mixture as smoothly as possible, in batches, adding just enough medicinal mushroom tea to let the blades whirr freely.

Unison (element: Water)

Heat up a deep and thick-bottomed pot (clay is ideal) with a thin layer of oil. When the oil is very hot, carefully pour in the chili purée. Stir the sizzling mixture constantly, until the chili purée has darkened and reduced to nearly a paste. Now, add the body—the tomato-nut-plantain mixture, stirring every few minutes, watching it darken and thicken, 20-30 minutes. Slowly stir in more Reishi tea and continue to reduce, stirring occasionally. The flavors will bloom in complexity the longer it cooks. Once it has thickened back again, add the cacao/chocolate (the darker, the better) and sea salt, to taste.

North American Mycological Association
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Newsletter of the North American Mycological Association
THE MYCOPHILE

Found at NAMA Foray

Clavariadelphus caespitosus

An unusual fungus found by Angie Miller, identified as *Clavariadelphus caespitosus.*

Photo by Angie Miller